

EXT(1)/EWA(1)/EWA(b)-2 JK
APSO12389

UR/0016/64/000/012/0026/0029

15

B

Yakovlev, L. S.; Korsh, P. V.; Havdonikas, O. V.; Fedorova, T. N.

epizootic of tularemia and Omsk hemorrhagic fever in muskrats in

mikrobiologii, epidemiologii i immunobiologii, no. 12, 1964, 26-29

bacterial disease, virus disease, disease incidence

epizootic of tularemia and Omsk hemorrhagic fever broke out
in the fall and winter of 1960-1961 in Sakhalinsk (Bar-
anovskiy, Karapatskiy, and Chanovskiy Rayons), and Kurgan (Kokovskiy Rayon),
an epizootic among muskrats may threaten muskrats being not
out with Omsk hemorrhagic fever. (U.S.S.R. 1964, 26-29)

Omskiy institut prirodnooohagovykh infektsiy Ministerstva
Zdravookhraneniya SSSR Omsk Institute of Natural-Focus Infections, Ministry

SUBMITTED: 03Jun63

ENCL: 00

SUB CODE: LS

NO REF SQV: 005

OTHER: 000

JPRS

Card 1/1

KORSH, V. B. task.

Determining operational engineering indices for automatic
control in classification hump yards. Vest. TSNII MPS 17
no.6:9-14 S '58. (MIRA 11:11)
(Railroads--Automatic train control)
(Railroads--Hump yards)

KORSH, V.B., insh.

Basic operational and technical requirements for small
car retarders. Vest, TSNII MPS 19 no.5:12-17 '60.
(MIRA 13:8)

(Railroads--hump yards)

SADIKOV, P.P.; LEBEDEV, T.P.; KORSH, V.B.; BELENOV, V.K.; PETRUNENKOV, A.Ya.;
TISHKOV, L.B.; ASHIKHIN, A.A., inzh. retsenzent; PREDE, V.Yu.,
inzh., red.; VOROTNIKOVA, L.P., tekhn.red.

[Technological equipment of railroad stations] Tekhnicheskoe
osnashchenie stantsii. Moskva, Transzheldorizdat, 1963.
153 p.

(MIRA 16:6)

(Railroads—Stations)
(Railroads—Equipment and supplies)

KORSH, YA.

USSR/Biology, Agricultural - Plant Growth
Stimulants

Sep. 51

"Chemical Weeding of Grain Crops," Ya. Korsh

"Nauka i Zhizn'" Vol XVIII, No 9, pp 33,34

Large-scale expts on the agricultural application of 2,4-dichlorophenoxyacetic acid and 2-methyl-4-chlorophenoxyacetic acid were conducted in many parts of the USSR in the summer of 1950. Spraying of fields for the purpose of weeding was carried out from planes. Docent I.I. Gunar and M.Ya. Berezovskiy, Cand Agr Sci, scientists from the Moscow Agr Acad imeni K.A. Timiryazev who were in charge of this work, received a Stalin Prize in 1951 for this work.

213T7

PUTYATIN, M.D., kandidat tekhnicheskikh nauk; KORSH, Ya.M., redaktor;
ISLINT'YHVA, P.G., tekhnicheskii redaktor.

[Experience in the operation of DT-54 diesel tractors] Opyt eksplua-
tatsii diesel'nykh traktorov DT-54. Moskva, Izd-vo "Znanie," 1953.
31 p. (MLBA 6:12)

(Tractors) (Diesel engines)

KORSH, Ya.

A sixth sense. IUn. nat. no. 4:32-33 J1 '56. (MIRA 9:9)
(Fishes)

KORSH, Ya.

Stream regulating system. Nauka i zhizn' 23 no.6:36 Ja '56.
(MLRA 9:9)

(Amu Darya Valley--Irrigation)

KORSH, Ya.M.

Steel produced from ores. Nauka i shizn' 23 no.11:50 N '56.

(MLBA 9:11)

(Steel--Metallurgy)

KORSH, Ya.

Precious grains. Znan. sila 31 no.8:26-29 Ag '56.

(MLRA 9:10)

(Ore dressing)

KORSH, Ya.

Turbodrills. IUn. tekhn. 2 no.9:46-48 S '57.
(Turbodrills)

(MIRA 10:9)

AUTHOR: Korsh, Ya.

4-58-4-10/19

TITLE: Oil From Sand (Neft' iz peska)

PERIODICAL: Znaniye - Sila, 1958, Nr 4, pp 26-27 (USSR)

ABSTRACT: The article describes the sandy hill of Kirmak near Baku which has proved to be so impregnated with raw petroleum that it can be "cracked" and refined at low cost. There are many more such hills in the neighbourhood, and around Sochi, there are thought to be many others. About 92% of the oil is extracted. The balance remains in a coke, which burns hotly and leaves a residue useful for building purposes. Inflammable gas is produced as a by-product. The article finally estimates that there are millions of tons of this black gold. There are 2 sketches.

AVAILABLE: Library of Congress

Card 1/1

KORSH, Ya.M.

The tagged silkworm. Nauka i zhizn' 25 no. 6:61-64 Jo '58.
(MIRA 11:8)

(Sericulture)

KORSH, Ya.

Blast furnace. *Inv. tekhn.* 3 no.1:30-32 Ja '59. (MIRA 12:1)
(Blast furnaces)

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SOV/25-59-6-45/49

AUTHOR: Korsh, Ya.

TITLE: A Migrating Lake

PERIODICAL: Nauka i zhizn', 1959, Nr 6, pp 78-79 (USSR)

ABSTRACT: The Lobnor Lake situated in the Takla-Makan desert (West China) changed both its geographic position and its chemical composition. Its water has been found to be sometimes salty, sometimes potable. Professor E.M. Murzayev, Doctor of Geographic Sciences, gives the following explanation of the strange facts: The Tarim and Konche-Darya Rivers, feeding the lake, sometimes change their directions and fill other depressions having other geological contents. In 1930, the lake was 100 km long, 50 km wide and not more than 5 m deep. New irrigation networks will probably dry up the entire lake.

Card 1/1

KORSHAK, F. A.:

Geodesy, Geodeziya, Dorizdat, 1949.

TABCON, W-13807, 22 Sep 50

FEDOROV, N. V.; F. A. KOPSHAK.

Geodeziya. (Geodesy) 3. Izd Perer. I Dopol. Moskva, Dorizdat, 1952.
381 p. Tables, Diagr. s.
"Spisok Literaturny": p. 377-(378)

So: N/5
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1952

STEPANOV, Nikolay Nikolayevich, professor; ~~KORSHAK, I.A.~~ redaktor;
SOLOVYCHIK, A.A., tekhnicheskiy redaktor

[Geodesy] Geodesiya. Leningrad, Gidrometsorologicheskoe izd-vo, 1954.
343 p. [Microfilm] (MIRA 8:3)
(Geodesy)

FEDOROV, Nikolay Vasil'yevich; KORSHAK, Fedor Afanas'yevich; CHVANOV, V.G.,
redaktor; KOGAN, F.L., ~~tekhnicheskii redaktor~~

[Geodesy] Geodesiia. Izd. 4-oe, perer. Moskva, Nauchno-tekhn. izd-vo
avtotransp. lit-ry, 1956. 403 p. (MIRA 10:1).
(Geodesy)

KORSHAK, Fedor Afanas'yevich; SERZHANOV, A.Ye., red.

[General projection with a moving pencil of rays in photogrammetry] Tsentral'noe proektirovanie dvizhushchimsia puchkom лучей v fotogrammetrii. Makhachkala, Dagestanskiy gos. univ., im. V.I.Lenina, 1962. 233 p. (MIRA 18:4)

KOVAL', N.M., nauchnyy sotr., kand. sel'khoz. nauk; GERMAN, Ya.B., starshiy nauchnyy sotr.; BIRYUKOV, Yu.V., starshiy nauchnyy sotr.; MART'YANOVA, O.A., starshiy nauchnyy sotr.; SHASHKOV, I.G., nauchnyy rabotnik; KORSHAK, I.T.; BROZHEYT, M.F.; KUKHARCHUK, G.N.; YEFREMOV, N.V., red.; CHEREVATSKIY, S.A., tekhn. red.

[Technological charts for grape cultivation] Tekhnologicheskije karty po vozdeleyvaniu vinograda. Kiev, Gos.izd-vo sel'khoz. lit-ry USSR, 1961. 141 p. (MIRA 15:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut vinogradarstva i vinodeliya im. Tairova (for Koval', German, Biryukov, Mart'yanova). 2. Zakarpatskaya opytnaya stantsiya (for Shashkov). 3. Ministerstvo sel'skogo khozyaystva USSR (for Korshak, Brozhey, Kucharchuk).
(Ukraine--Viticulture)

L 14133-66 EWT(1)/EWT(m)/T/EWP(t)/EWP(b) IJP(c) JD/GG

ACC NR: AP6000875

SOURCE CODE: UR/0181/65/007/012/3655/3657 66

AUTHORS: Galavanov, V. V.; Goryunova, N. A.; Korshak, N. M.;
Mamayev, S.; Nazarov, A.

ORG: Physicotechnical Institute im. A. F. Ioffe AN SSSR, Leningrad
(Fiziko-tekhnicheskij institut AN SSSR)

TITLE: Some properties of p-CdSnAs₂ 21, 41, 51

SOURCE: Fizika tverdogo tela, v. 7, no. 12, 1965, 3655-3657

TOPIC TAGS: cadmium compound, arsenic compound, tin compound,
single crystal, electric conductivity, Hall coefficient, thermo-
electric power, temperature dependence

ABSTRACT: Although the properties of n-type CdSnAs₂ have been described in the literature, there is no published information on the p-type compound. The authors have produced by single crystals of p-type CdSnAs₂ zone melting and measured the temperature dependence of the specific electric conductivity σ , the Hall coefficient R, and

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ACC NR: AP7006211

(A)

SOURCE CODE: UR/0363/67/003/001/0180/0181

AUTHOR: Goryunova, N. A.; Borshchevskiy, A. S.; Venkrbets, Ya. Ya.; Korshak, N. M.

ORG: Physicotechnical Institute im. A. F. Ioffe, Academy of Sciences, SSSR (Fiziko-
tekhnicheskii institut Akademii nauk SSSR); Department of Solid State Physics,
Prague Polytechnic Institute (Kafedra fiziki tverdogo tela, Prazhskiy politekni-
cheskiy institut)

TITLE: Growing of CdSnAs_2 single crystals

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 3, no. 1, 1967, 180-181

TOPIC TAGS: cadmium compound, tin compound, arsenide, single crystal growing, zone
melting

ABSTRACT: A single-crystal ingot of the semiconducting compound CdSnAs_2 was prepared
by zone melting. The zone temperature was 600°C , and the gradient at the crystalli-
zation front, 20°deg/cm . After one pass of the zone at a rate of 8 mm/hr , an ingot
was obtained whose first half was a single crystal, whose middle portion contained
twins, and whose end was macrocrystalline and contained cracks. The mechanism of
formation of cracks is explained. The ingot had an n-type conductivity. The elec-
trical conductivity σ , carrier concentration $n = 1/eR$ and Hall mobility $U = R\sigma$,
where R is the Hall coefficient, were measured at 100 and 300°K . It is shown that
the chief mechanism of electron scattering in $\eta\text{-CdSnAs}_2$ with $n \geq 1 \times 10^{18}\text{ cm}^{-3}$ at

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UDC: 546.3-19-48-811-19+548.55

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temperatures is scattering on impurity ions. During zone recrystallization, the
properties are separated, as indicated by the measured mobilities of the charge
carriers. The zone melting method is thought to be effective for growing pure CdSnAs_2
single crystals with high electron mobilities. By carrying out the zone melting
repeatedly and using a single crystal seed, the authors obtained CdSnAs_2 ingots in
which individual single crystal grains were up to 50 mm in size. The CdSnAs_2 single
crystals obtained had an electron concentration from 7×10^{16} to $5 \times 10^{18} \text{ cm}^{-3}$ at
300°K. Orig. art. has: 1 figure and 1 table.

SUB CODE: 20/ SUBM DATE: 20Dec65/ ORIG REF: 004/ OTH REF: 005

Card

2/2

KORSHAK, V. V.

Condensation of methylene chloride with phenols. P. P. Shorygin, I. P. Losev and V. V. Korshak. J. Applied Chem. (U.S.S.R.) 9, 1432-6 (in French 1436) (1936).- CH_2Cl_2 was condensed with PhOH in the presence of 2-10 cc, of 25% NH_3 aq. (Catalyst) in a sealed glass tube at 180° for 1 hr., yielding 3.3 g. of tar per 4.2 g. of CH_2Cl_2 of the compn. C 74.27, H 7.43, and Cl 0%, AcO no. 259, mol. wt. 192.7 Br no. 203, d. l. 159, initial m. p. 68° , relative viscosity of the 3% alc. soln. 1.137. NaOH , HCl and the "Kontakt Petrov" (petroleum sulfonic acids) were also tested as catalysts with neg. results. The condensation of 71 g. of Ph OH and 42 g. of CH_2Cl_2 in a rotatory steel autoclave at 180° under pressure up to 45 atm. for 1 hr. in the presence of 80 cc. of 25% NH_4OH yielded 50 g. of a dark brown tar (contg. no Cl) of "bakelite" type, m. $108-20^\circ$. The tar was polymerized at 160° in the presence of 10% of urotropine in 5 min. and in 3 min. with 20% of the latter, and the product of the polymerization was used in the prepn. of a plastic mass. The plastic mass, contg. polymerized tar 50 and wood dust 50%, was pressed at $150-60^\circ$ at 300 atm. to a board, which had good mech. properties and was not much affected by acid and water. Condensation of CH_2Cl_2 with a technical cresol under the same condition yielded a light brown tar m. 50° . Condensation of CH_2Cl_2 with urea yielded a light brownish product consisting mainly of biuret, and in the absence of NH_3 a white solid substance consisting of biuret and cyanuric acid. One literature and 5 patent references. A. A. Podgorny

KORSHAK, V. V.

"Condensation of Methylene Chloride with Phenols, II." by P. P. Shorygin, I. P. Losev, and V. V. Korshak. J. Applied Chem. (USSR) 10, 138-40 (in French 1140) (1937); cf. C.A. 31, 2181². - CH_2Cl_2 condenses with PhOH in the presence of aq. NH_3 at 130° on 5 hrs. heating with a mol. ratio of PhOH to CH_2Cl_2 of 1.25. NH_3 can be replaced ~~with~~ by MeNH , Me_2NH or Me_3N ; hence $(\text{CH}_2)_6\text{N}_4$ is not an intermediate reaction product of the condensation. PhOH (7.1 g.) heated for 1 hr. at 180° with 4.2 g. CH_2Cl_2 gave in the presence of NH_3 , MeNH_2 , Me_2NH and Me_3N , resp., 5.83, 8.36, 5.32 and 4.16 g. of resin.

A. A. Podgorny

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CA

Action of hexachloroethane on Grignard compounds.
V. V. Korshak, *J. Gen. Chem.* (U. S. S. R.) 9, 1153-4
(1939). EtMgBr , PhMgBr , $p\text{-MeC}_6\text{H}_4\text{MgBr}$ and $\alpha\text{-C}_6\text{H}_4\text{MgBr}$, resp., were treated with C_2Cl_6 in ether, in the mol. ratio 8:1 and 1:1, resp. The results were in both cases the same, the reaction products being C_{12}H_6 , C_{10}H_8 , C_{12}H_8 , $\text{C}_{10}\text{H}_{10}$, Ph , p,p' -bitolyl, α,α' -binaphthyl, C_6Cl_6 , $\text{C}_6\text{H}_5\text{Cl}$ and $\text{C}_6\text{H}_6\text{Cl}$. The reaction mechanism is discussed.

Gertrude Herend

Lab., Organic Chemistry, Mendeleev Inst.

COMMON ELEMENTS																										COMMON TRANSITION METALS																									
1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																																																			
<p>CR</p> <p>The action of sulfur monochloride on phenylacetonitrile. V. V. Korshak and A. F. Lisenko. <i>J. Gen. Chem.</i> (U. S. S. R. T. S. 1329-31(1930)).—PhCH_2CN (I) (40 g.) with 93 g. S_2Cl_2 (II), allowed to stand at room temp. for 15 days, with occasional stirring, gave a mixt. of I, PhCH_2CICN, PhCCl_2CN (III) and diphenylmalonitrile (IV), m. 150-60°. By extending the time of reaction to 3 months or by heating a mixt. of 10 g. I, 10 g. III and 18 g. II on the water bath for 20 hrs. complete conversion to IV was obtained. IV sapond. with alc. KOH gave diphenylmaleic anhydride (V), yellow, m. 153°. I (58 g.) with 135 g. II refluxed on the water bath for 40 hrs. gave 30 g. diphenyldichlorosuccinonitrile (VI), m. 190-90°, and a small amt. of IV. VI sapond. with 10% alc. KOH gave V and with KI in Me_2CO gave IV in quant. yield. An attempt to add Br and Cl to IV proved unsuccessful.</p> <p>John Livak</p> <p>Moscow Chemico-Technological Inst. im. D. I. Mendeleev.</p>																																																			
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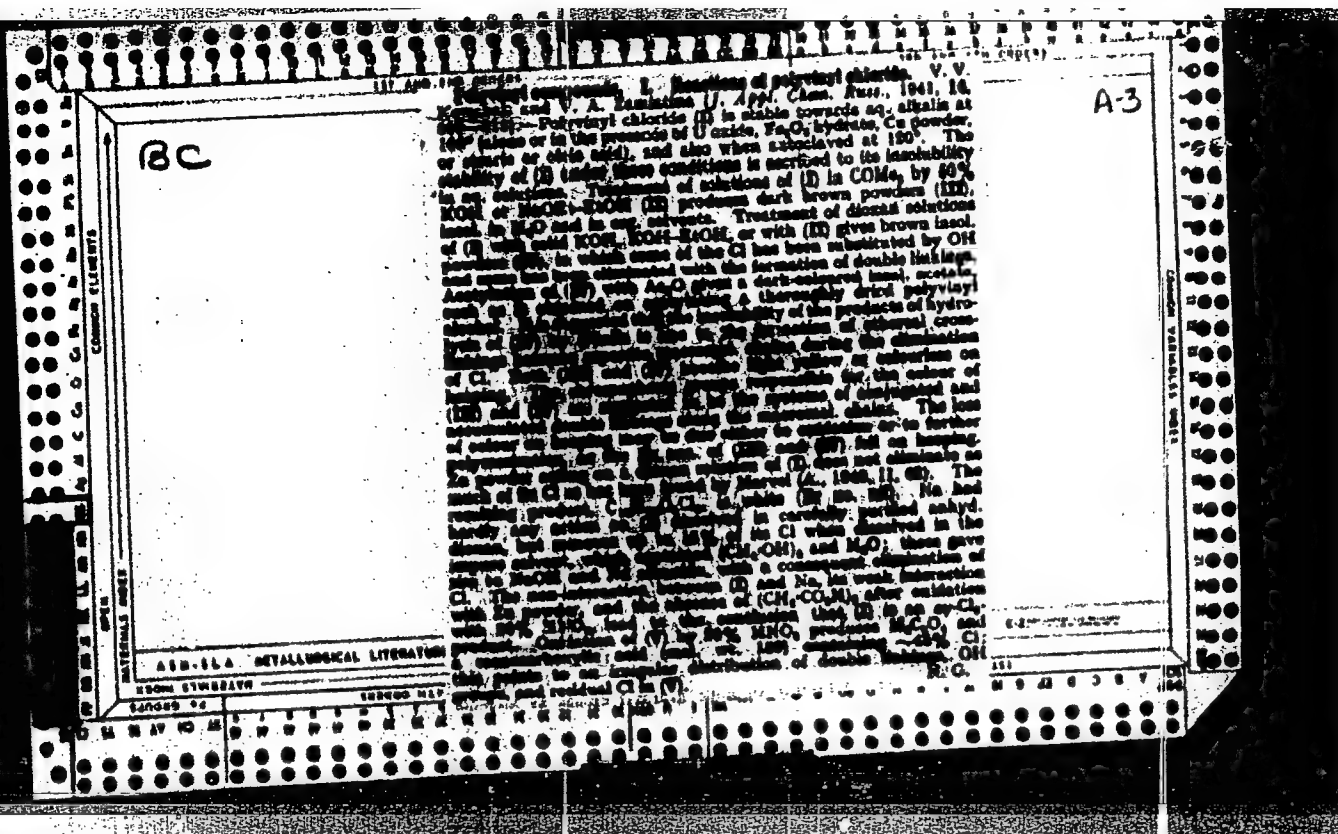
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ca

The action of acetylated ethylene dichlorohydrins on benzene in the presence of aluminum chloride. Ya. Ya. Makarov-Zemlyanskii, V. V. Korshak and S. V. Savenkov. J. Gen. Chem. (U. S. S. R.) 11, 331-4 (1941).—When $\text{ClCH}_2\text{CH}_2\text{OAc}$ reacts with C_6H_6 and AlCl_3 , the products are bibenzyl (I) and PhCOMe . Under the same conditions, bis(2-chloroethyl) malate, b. 132°, gives only I and tan, while $p\text{-NO}_2\text{C}_6\text{H}_4\text{COCH}_2\text{CH}_2\text{Cl}$ reacts only enough to give traces of I. H. M. 1 precursor

ASAC-55A METALLURGICAL LITERATURE CLASSIFICATION

CA
Preparation of adiponitrile. V. V. Korshak and I. I. Palkoniuv. *J. Applied Chem.* (U. S. S. R.) 14, 632-3 (1941).—The authors studied the prepn. of $(CH_2)_4(CN)_2$ from the acid through the diamide. Adipic acid (146 g.) is heated to 100-200° and treated with a stream of NH_3 ; H_2O is condensed and its amt. is measured; at the end of the reaction 30-2 cc. H_2O satd. with NH_3 is obtained. The duration of reaction is 3-4 hrs.; near the end the mass becomes viscous and the temp. is raised to 210-20°, and NH_3 is stopped when the contents become nearly solid. The product is powdered while hot, and recrystd. from H_2O twice (several drops of concd. NH_4OH are added to the H_2O). Yield 90 g. (82%), m. 220-0.6°. The mother liquor yields almost all the unreacted acid. A series of expts. confirmed that the above temp. gives the highest yield of the $(CH_2)_4(CONH)_2$. The diamide (144 g.) and 357 g. Ac_2O (h. 138-40°) were treated with 1.5 g. NH_3 , molybdate and the mixt. heated to 210°, finally to 220-30°, for a total of 2.5-3 hrs., with distn. of the $AcOH$ and Ac_2O , which are collected and weighed. When the distillate is 370-80 cc., suction is applied and the residual Ac_2O is distd. at 50-60 mm. The product is then distd. *in vacuo*, by 120-220°, washed with satd. $NaHCO_3$ soln. and redistd. $(CH_2)_4(CN)_2$ is obtained after 2 redistns. in 71.6% yield, b. 158-7°, d. 0.9976, n_D 1.4380. A variation was tried as follows: 110 g. adipic acid was converted into the diamide as above and when the reaction mixt. hardened, the NH_3 stream was stopped and 300 g. Ac_2O added with 1.5 g. NH_3 , molybdate or Al_2O_3 . Then Ac_2O and excess $AcOH$ were distd. and the nitrile distd. *in vacuo*, until decompn. became noticeable in the residue, which was then re-amidated and retreated with Ac_2O as above. A total of 93 g. crude nitrile was obtained, which on washing with satd. $NaHCO_3$ was redistd. *in vacuo*; $(CH_2)_4(CN)_2$, b. 158-9°, was obtained in 70% yield (78 g.). Some $AcNH_2$ was obtained from lower fractions during distn. of the product; it is apparently formed through $OH-NH_2$ exchange between $AcOH$ and $(CH_2)_4(CONH)_2$.
G. M. Kosolapoff
to the chemistry of the nitrile, m. 167-171°



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Polycondensation reactions. IV. The viscosity of solutions of polyamides. S. R. Rafikov and V. V. Kiselev. *Bull. Acad. Sci. U.S.S.R., Classe sci. chim.* 1944, 632 (English summary). Solns. in *m*-cresol of the polyamides obtained by condensing $\text{NH}_2(\text{CH}_2)_n\text{NH}_2$ and $\text{HO}(\text{C}_6\text{H}_4)_m\text{CO}_2\text{H}$ show limiting values of concn. above which the sol goes to a gel, and variations of the viscosity w. Z_η from linearity, which are not in accord with the values calcd. by Staudinger. The differences are most pronounced in the case of low-mol.-wt. polymers and are due to free NH_2 groups at the ends of the mols. These are easily solvated and cause assocn. into linear chains, thus raising the viscosity of the soln. Rise in temp. disrupts the chains and decreases the solvation; thus the viscosity is lowered.

H. M. Leicester

ASU-5LA METALLURGICAL LITERATURE CLASSIFICATION

1940-1949

1950-1959

1960-1969

1970-1979

1980-1989

1990-1999

2000-2009

2010-2019

2020-2029

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Polycondensation reactions. I. Products of condensation of some dibasic acids with diamines. V. V. Korshak and S. R. Radkov. *J. Gen. Chem. (U.S.S.R.)* 14, 674-75 (1944) (English summary).—The polycondensation of ethylenediamine, hexamethylenediamine, and benzidine with sebacic and adipic acids was studied, as well as the reaction of the latter acid with tetramethylenediamine. It was shown that tetramethylenediamine and hexamethylenediamine form high polymers with both acids, while benzidine and ethylenediamine yield only low-mol. products. The phys. and chem. properties of the low-mol. products were studied. The poly. and chem. properties of the high-mol. products were studied. The intermediates were prepared as follows: Sebacic acid (312 g.) and 273 cc. 40% NaOH were heated for 9 hrs. at 200-70° under 180 atm. pressure; the mixt. was treated with water and the aq. layer on solidification gave 73% sebacic acid, m. 130-4° (from water). Cyclohexanedicarboxylic acid was slowly added to 201 g. HNO₃ (d. 1.42) and 180 g. H₂SO₄ (d. 1.84), with simultaneous addition of 123 g. concd. H₂SO₄ in the presence of 0.7 g. Cu nitrate, at 60° to yield 85% adipic acid, m. 146-51° (from water). Adiponitrile (10.8 g.) in 200 cc. dry MeOH is poured slowly on 24 g. Na, at such a rate that the Na remains molten; this is followed by 180 cc. dry MeOH, and after completion of the reaction, the cooled soln. is treated with 30 g. NaOH and steam-distd. into dil. HCl until 1 l. distillate is obtained; the soln. is concentrated to dryness to

yield 88% hexamethylenediamine-HCl; mixing with 18 g. powd. KOH and immediate distn. gives 3.5 g. hexamethylenediamine, b. 190-203°, while an aq. soln. 2.5 g. may be obtained by aq. of the aq. soln. with alkali and distn. with H₂O; di-Ba deriv., m. 154-55°. Adipic acid and 5% excess hexamethylenediamine in aq. KOH give 84% hexamethylenediamine adipate, m. 190-1°; sebacate, m. 173-2.5°; acetate, m. 120-1°. II. Condensation of hexamethylenediamine with adipic acid. S. R. Radkov and V. V. Korshak. *Ibid.* 1953-50 (English summary).—The influence of duration, temp., amt. of solvents and their nature, and the rapidity and completeness of water removal were studied in the condensation of hexamethylenediamine with adipic acid. It was shown that it is sufficient to heat the salt for 5-6 hrs. at 230-40° in an equal amt. of solvent (xylenol, cresol, or phenol). The reaction also proceeds in water as well as by heating of the salt without solvent, with the formation of low-mol. products. Both low- and high-mol. products are capable of further condensation on heating in a vacuum or in a stream. The detg. factor for the formation of high-mol. products is the degree and completeness of water removal; the reaction is reversible at temps. over 200°, with formation of low-mol. products as a result of partial hydrolysis. III. Influence of the ratio of components on the polyamide chain growth. S. R. Radkov, V. V. Korshak, and L. N. Piskina. *Ibid.* 1003-6.—It was shown that the presence of an excess of one of the components has an important influence on the chain length in adipic acid-hexamethylenediamine condensation; the excess, especially of the acid, affects the degree of polycondensation inversely proportionally. Heating of the polyamide, from equimol. amts. of ingredients, with free adipic or sebacic acids causes acidolysis with formation of low-mol. products, which no longer change on further heating, in distinction from the original polyamide. G. M. Koschepoff

KORSHAK, V. V.

"Studies of polycondensation reactions. II. On the condensation of hexamethylenediamine with adipic acid." Rafikov, S. R. and Korshak, V. V. (p. 983)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1944, Volume 14, no. 9-10.

Lab. High Molecular Compounds Inst. Organic Chemistry, AS SSSR.

ca

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Mechanism of the Friedel-Crafts reaction. II. V. V. Kozlov and G. S. Kolesnikov (Moscow Chem. Tech. Inst. Mendeleev). *J. Gen. Chem. (U.S.S.R.)* 14, 1002-5 (1944) (English summary); cf. *C.A.* 39, 4563. —It was shown that in mixts. of $AlBr_3$ with cyclohexyl chloride, salts of 80.62% Br and 19.48% Cl. Dets. of HCl and HBr in the off-gases from the reaction of benzene halogen derivs. in the presence of a different halide of Al showed the presence of both gases. Thus, with $AlBr_3$ catalyst the following compds. gave the gas compn. as listed below: $BaCl$ 31.03% HCl, 68.33% HBr ; $PhCH_2Cl$ 25.07% and 74.33% cyclohexyl chloride 24.07% and 75.93%; $p\text{-}ClC_6H_4Cl$ 21.86% and 78.14%; $PhCl$ 18.17% and 81.83%. With $AlCl_3$ catalyst the following gas compns. were found: $BaBr$ 80.47% HCl, 19.53% HBr ; $PhCH_2Br$ 70.41% and 29.59%; HBr 69.74% and 30.26%; $PrBr$ 66.67% and 33.33%. The results support the formation of an intermediate complex of the type $R(AlX_2)$.

G. M. Kozlov

ASU-SLA METALLURGICAL LITERATURE CLASSIFICATION

6-27-52-1234

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CA

Polycondensation reactions. V. Determination of terminal groups of polyamides. V. A. Zamyatina and V. V. Korshak. *Bull. acad. sci. U.R.S.S., Classe sci. chim.*, 1945, 481-5.—Polyamides are prepd. by heating together hexamethylenetetramine (I) and adipic acid (II) at 230-250°. The product is dissolved in cresol, reprecipitated by adding alc., collected, and dried. One-g. portions are treated with 10 ml. 0.01 N HCl and also 0.01 N NaOH for 2 hrs. and the excess of reagent is back-titrated. The mol. wt. is given by $M = 200,000/a + b$, where a and b are the resp. titers in ml. per g. of polyamide. M varies from 3000 to 20,000 depending on the proportions of I and II used, temp., and time of heating. Values of M obtained by viscosity measurements are similar. When I:II = 1, terminal NH_2 groups predominate owing to decarboxylation of II during the reaction. Cf. C.A. 40, 4665. B. A.

ASB-ELA METALLURGICAL LITERATURE CLASSIFICATION

FROM SYNDICATE

FROM BOMBY

FROM SYNDICATE

FROM BOMBY

LIST AND NO. ORDERS		PROCESSOR AND PROPERTIES INDEX		LIST AND NO. ORDERS	
1		10		1	
<p><i>ca</i></p> <p>Polycondensation reactions. VI. Acidolysis and aminolysis of polyamides. V. V. Korshak and V. A. Zamiatina (Inst. Org. Chem., Acad. Sci. U.S.S.R.). <i>Bull. Acad. Sci. U.S.S.R., Class. sci. chim.</i> 1943, 610-15 (in English, 616); cf. <i>C.A.</i> 39, 4262, 4302. When cresol solns. of polyamides are heated for 4 hrs. at 240° with acids such as adipic (I) or stearic (II), they are broken down into smaller mole. (acidolysis). The mol. wt. of the final product is inversely proportional to the amt. of acid used. When I is used, the products have terminal CO₂H groups, but on long heating, these lose CO₂ and the mol. acquires a terminal hydrocarbon group. If II is used the terminal group is initially hydrocarbon. In such cases, titration gives incorrect values for the mol. wt. Hexamethylenetetramine produces a similar effect (aminolysis) but the product has only terminal NH₂ groups. Titration of such compds. gives low values for the mol. wt. because the NH₂ groups are united by H bonds.</p> <p>H. M. Leicester</p> <p>Also: Iz. Ak. Nauk SSSR, Otdel. Khim. Nauk.</p>					
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>					
FROM SOURCE		FROM SOURCE		FROM SOURCE	
1		1		1	

KORSHAK, V. V.

Polyvinyl derivatives. II. Polyvinylbutyl ether. V. V. Korshak and V. A. Zaitseva. J. Gen. Chem. (U.S.S.R.) 15, 047-51 (1945) (English summary); J. C.A. 37, 1986¹.—The polymerization of butylvinyl ether was studied between -55° and 80° in the presence of various catalysts: SnCl_4 is most vigorous, BF_3 slightly less vigorous, FeCl_3 less vigorous and capable of most reproducible results, AlCl_3 gave colored products. The presence of SO_2 had no effect on the polymerization. The polymers are viscous and very sticky fluids, sol. in Et_2O , and in benzene, insol. in EtOH and in water and generally have mol. wts. up to about 6000 (max. size obtained with SnCl_4 at 80°) which polymer was isolated by fractional pptn. of the crude mixt. Oxidation by HNO_3 gave butyric and oxalic acids; this showing the structure of polymer as of a 1,3-glycol. Hydrolysis by acids led only to tars, whereas hydrolysis by alkali, especially alc. EtONa , gave noticeable amts. of polyvinyl alc. (no details or yields given). Heating of the polymer with 1:1 mixt. of AcOH and Ac_2O in the presence of NaH_2PO_4 gave a product which contained but 28% Bu groups, and thus was a mixed acetate-butyl ether of polyvinyl alc.; it differed from the original polyether by ready soly. in EtOH .

G. M. Kosolov

Lab. High Molecular Compounds, Inst. Organic Chemistry, AS SSSR.

S.C. 6.

35. Synth. Res. & Glass Products

Products (polyamides) of linear condensation of diamines with dicarboxylic acids. V. V. KUMAR and S. R. RAJAN (Compt. Rend. Acad. Sci.

U.S.S.R., 1965, 28, 25-N; Brit. Abs., 1966, B11, 212). Polyamides from adipic and sebacic acids with ethylene-, tetramethylene-, hexamethylene-, and decamethylene-diamines and with benzidine have been examined. Products with the highest molecular weight were obtained with hexamethylene-diamine, that with the most complete elimination of water, giving the highest degree of reaction. The initial acid/diamine ratio determines the molecular weight of the product, and is inversely proportional to the excess of acid present. Free acid fused with the polymer causes lowering of molecular weight. A prolonged reaction time does not result in increased molecular weight if excess of acid is present. Three-dimensional, insoluble, infusible products are formed by heating the polymer in air, possibly owing to cross-linking.

352M.F.N.22.14

1986

[illegible]

KORSHAK, V. V.

Products of addition of mercuric nitrate to acetylene. V. V. Korshak and V. A. Zamyatina. Bull. acad. sci. U.R.S.S., Classe sci. chim. 1946, 111-14 (in Russian).--

C_2H_2 was passed into a 25% soln. of $Hg(NO_3)_2$ in 2% HNO_3 ; the ppt. was washed after rapid filtration by 2% HNO_3 , H_2O , alc., and Et_2O . It is a heavy white solid, $C_2HNO_4 \cdot Hg_2$, which inflames on heating and gives CHI_3 with iodine in KI ; it absorbs Br from its soln. in CCl_4 or H_2O (2 moles and 6 moles, resp.). Heating 1 g. in 20 ml. $AcOH$ gives an anhydride, $C_2H_2O_2Hg$ (mol. wt. 249.5-269, in $AcOH$), which ppts. from the reaction soln. and decomp. above 240° . If C_2H_2 is passed into 10 g. $Hg(NO_3)_2$ in $AcOH$ contg. a little Ac_2O the pptd. product is $C_2H_2N_2O_7Hg_2$, adds Br and gives CHI_3 with iodide, i.e. is a deriv. of AcH . $CECH$: $CHHgCl$ (1g.) (from C_2H_2 and $HgCl_2$ in 15% HCL) was shaken in 25% aq. $Hg(NO_3)_2$; soln. and simultaneous pptn. take place; the product is $C_2HNO_4Hg_2$, identical with that described above. On the basis of the observations, the following structures are believed to be correct: $C_2H_2N_2O_7Hg_2$ is $(O_3NHg)_2CHCHO$, while $C_2HNO_4Hg_2$ is $Hg.O.CH:CHgNO_3$.

G. M. Kosolapoff

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Polycondensation reactions. VII. Influence of excess of adipic acid on polycondensation with hexamethylenediamine. V. V. Korshak and V. V. Golubev. *Bull. acad. sci. U.R.S.S., Classe sci. chim.* 1948, 185-90 (in Russian); cf. *C.A.* 40, 4065; 41, 1017; 42, 6150. — Excess of adipic acid (I) in the condensation with hexamethylenediamine (II) leads to polyamides of lowered mol. wt. An empirical formula $M = (1254/b) + 140$, where M is the av. mol. wt. of the products and b is the wt. % of excess I, was derived from considerations in the previous paper. The technique used was that of Rafikov and K. (*C.A.* 39, 4503). The products were examined (for mol. wt. (by viscosity in cresol) and no. of end groups according to a previous paper (*Ibid.* 1945, 480)). The following results (given in the order mol. % excess I and mol. wt. by end groups, by viscosity, and by the above formula) were obtained: 0.5, 35,087, 23,023, above formula 45,346; 1, 23,800, 19,520, 22,746; 2, 18,181, 14,870, 11,446; 6, 6341, 5038, 3912; 15, 4200, 4138, 1662; 30, 3169, 2853, 899; 60, 2604, 2492, 522; 100, 2176, 2029, 372. The results are also given graphically. The divergence between calcd. and observed mol. wts. is not caused by incomplete reaction and may be explained by the unreacted portion of I, which upsets the equil. $I + II \rightarrow$ polyamide; by application of a cor. formula, using a as a part of I which enters the reaction: $a = 22,000/(M - 140)a$, where a is the total amt. of I used, the values of a were found to be: 0.77 at

2 mol. % excess I, 0.77 at 0%, 0.34 at 15%, 0.28 at 30%, 0.15 at 60%, and 0.12 at 100% excess I. Two explanations of the action of excess I may be given: (1) the reaction proceeds through alternate coupling of I and II until the terminal groups are both of type I and reaction ends (this, however, does not account for interaction of the polyamide with I), and (2) such interaction occurs by means of acidolysis, which leads to chain scission and decrease of av. mol. wt. G. M. Kosolapoff

Also: Iz. Ad. Nauk SSSR, Otdel
Khim. Nauk

Inst. of Organic Chem., AS USSR.

COMMON ELEMENTS		PROCESSES AND PROPERTIES INDEX	
<p>ca</p> <p>Tetraethyllead. V. V. Korshak and G. S. Kolesnikov. <i>Uspekhi Khim.</i> 15, 325-42(1946).—A review of the applications, lab. and com. methods of prepn., and phys., chem., and physiol. properties of PbEt₄. 146 references. Arild J. Miller</p> <p>10</p>			
<p>ASME-A METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>GROUPS</p> <p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</p>		<p>CLASSIFICATION</p> <p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</p>	

1ST AND 2ND EDITIONS																		1RD AND 4TH EDITIONS																	
PROCESSES AND PROPERTIES INDEX																																			
<p><i>ca</i></p>																		<p style="text-align: right;"><i>10</i></p> <p>Mechanism of the Friedel-Crafts reaction. III. Reaction of vinyl ethers and esters with benzene. N.Y., Korshak, B.K. Samplavskaya, and A. I. Gershonovich (Moscow Chem. Tech. Inst. Mendeleeva). J. Gen. Chem. (U.S.S.R.) 16, 1065-70(1946) (in Russian); cf. C.A. 40, 40K3⁺.—C₆H₅ (180 g.) and 24 g. AlCl₃ were treated with 80 g. BuOCH(CH₃)CH₃; after heating on a water bath, the mixt. was treated with dil. acid and the org. layer distd. with steam to yield 2 g. BuPh (I), b. 178-80°, unreacted C₆H₅, and a tarry residue, which, when subjected to dry distn., gave BuOH, acetaldhyde di-Bu acetal, b. 179-82°, and a small amt. of material, b. 216-30°, which was not investigated; no styrene was found in the condensate.. It was apparent that the ether failed to condense with C₆H₅, but merely formed a polymer; the latter reacted with C₆H₅ only to a slight extent with formation of I. C₆H₅ (78 g.) and 300 g. AlCl₃ were treated with 43 g. AcOCH(CH₃)CH₃ (slow addn.); a vigorous evolution of HCl took place, and the mixt. was heated to 60-70° several hrs. to yield, after the usual decompn., small amts. of AcPh, 1,1-diphenylethane (II), and 9,10-dimethyl-9,10-dihydroanthracene (III), m. 181-2° (from EtOH). III is readily obtained in 72% yield from 4 g. II and 3 g. AlCl₃ at 60-70°. AcH passed into a mixt. of C₆H₅ and AlCl₃ (no amts. given), followed by heating to 60-70° several hrs., give up to 80% III and substantial yields of II, b. 162-4°.</p> <p style="text-align: right;">G. M. Kosolapoff</p>																	
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KORSHAK, V.

PA 52T2

USSR/Chemistry - Condensation, Jul/Aug 1946
Chemical Poly-
Chemistry - Amides, Poly - Acidolysis
and Aminolysis of

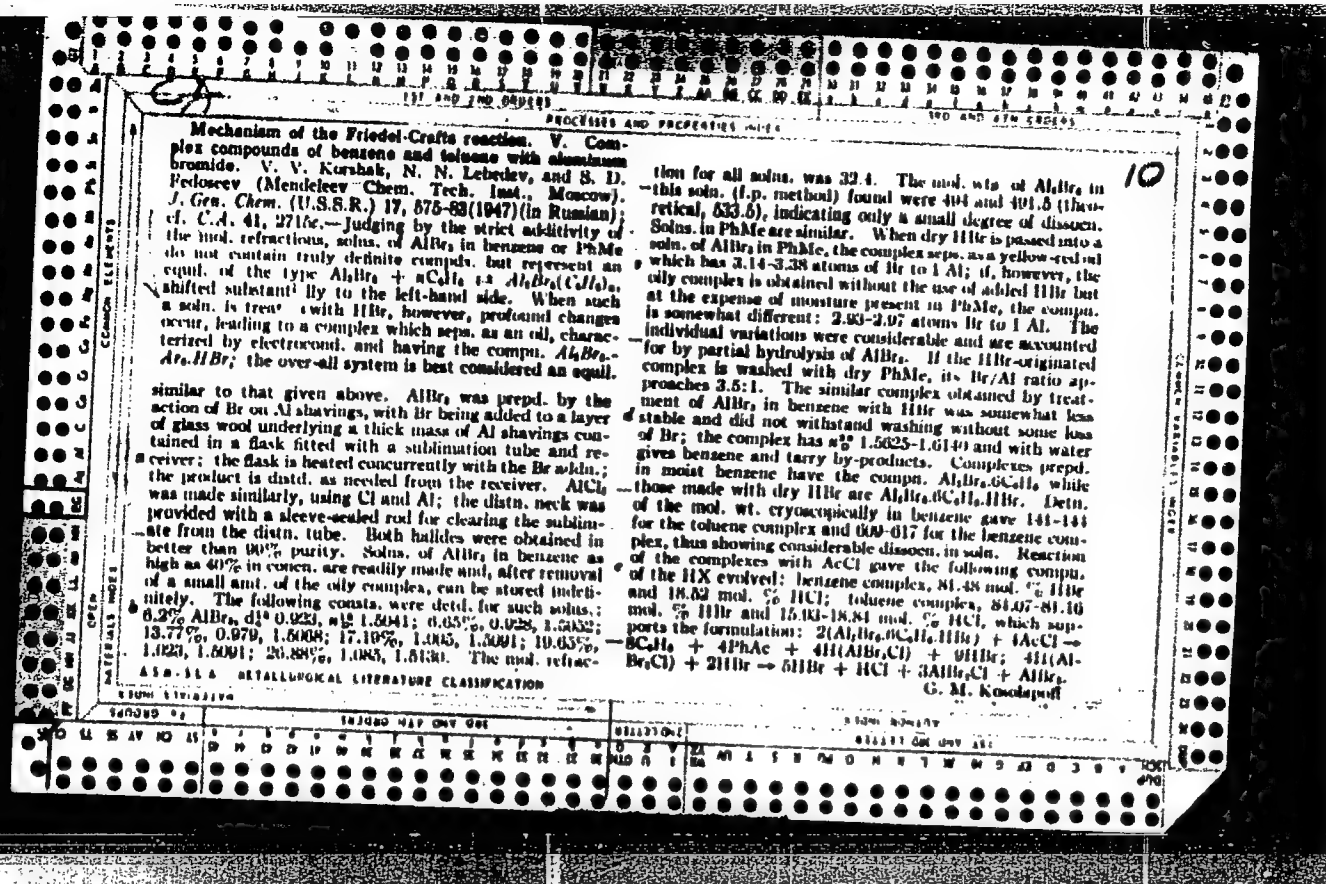
"Studies of Polycondensation Reactions," V. Korshak,
B. Raffikov, V. Zamiatina, Inst Org Chem, Acad Sci
USSR, Moscow, 18 pp

"Acta Physicochimica URSS" Vol XXI, No 4

Studies of polycondensation reaction between hexa-
methylenediamine and adipic acid, and of diamines
with dicarboxylic acids. Acidolysis and aminolysis
reactions consisting in destruction of polyamides
on heating with acids or amines are described. Re-
ceived 16 Oct 1945.

3272

COMMON ELEMENTS																										COMMON VARIABLE ELEMENTS																									
1ST AND 2ND GROUPS																										3RD AND 4TH GROUPS																									
PROCESSES AND PROPERTIES INDEX																																																			
<p>ca</p> <p>Polycondensation reactions. V. A. Zamyatina, S. R. Rafikov, and V. A. Zamyatina (Inst. Org. Chem., Moscow), <i>Acta Physicochim. U.R.S.S.</i> 21, 723-744 (1967) (English); cf. C.A. 40, 1112, 1965. Review of the properties of the polyamide from hexamethylenediamine and adipic acid, of the mechanism of the polycondensation reaction, and of acidolysis and aminolysis of polyamides. A. Fleischer</p> <p>10</p> <p>MA</p>																																																			
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MATERIALS INDEX		PROCESS AND PROPERTIES INDEX	
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89	90	89	90
91	92	91	92
93	94	93	94
95	96	95	96
97	98	97	98
99	100	99	100

CA

The interaction of chlorides with carbon. V. V. Korshak, Yu. A. Streptikheev, and L. F. Verlatova (D. I. Mendeleev Chem. Technol. Inst., Moscow). *J. Gen. Chem. (U.S.S.R.)* 17, 1629-31 (1947) (in Russian).—(1) Chlorination of active C, dried at 120° with Cl₂ mixed with SOCl₂, yielded some CCl₄ at 700-800°; admixt. of SOCl₂ or of FeCl₃ was ineffective; nor was any CCl₄ formed in attempts at chlorination by heating a mixt. of C with SOCl₂ in a sealed tube 100 hrs. at 350-400°. (2) Thermal decompn. of CCl₄ vapor over active C decreases, at a given temp., with increasing rate of flow *r*, and, at const. *r*, linearly with the temp.: at *r* = 0.10, 0.60, 3.10, 6.1, 4.9; the wt.-% CCl₄ decompd. was: at 600°, 12.1, 15.1; at 700°, 52.5, 23.0, 23.9. The decrease of the decompn. yield with decreasing time of contact in rapid only up to about *r* = 0.6, considerably slower with further increasing *r*; the slopes of the lines giving the degree of decompn. as a function of temp. are steeper the lower the *r*. The catalytic effect of C on the decompn. of CCl₄ is demonstrated by 2 runs without C: at *r* = 0.10 and 1.50, wt.-% CCl₄ decompd. at 400°, 6.0 and traces, at 700°, 26.0 and 15.0; the degree of decompn. reached at 500°, 16.0 and 15.0. (3) The products of the thermal decompn. of CCl₄ are Cl₂, C₂Cl₆, CCl₃, and CCl₂ at a lower temp. (400°) more C₂Cl₆ is formed, while higher temp. (700°) favors formation of CCl₃ and particularly C₂Cl₆. (4) Thermal decompn. of CCl₄ on active C increases nonlinearly with temp.: at *r* = 0.50, 0.25, 0.20, 12.3, 9.6, 8.3, 4.3; at 600°, 22.2, 17.3, 16.0, 12.6; at 700°, 42.1, 30.8, 26.8, 26.0. The products are Cl₂, C₂Cl₆, and CCl₃. (5) The catalytic effect of SOCl₂ on the formation of CCl₄ is due to the reactions 2SOCl₂ → SO₂ + Cl₂ + S + C → CCl₄, SOCl₂ + S, and CCl₃ + SOCl₂ → CCl₄ + SOCl₂. The mechanism of the thermal decompn. of CCl₄ is represented by

$$\text{CCl}_4 \rightarrow \text{Cl} + \text{CCl}_3 \rightarrow \text{Cl} + \text{CCl}_2 \rightarrow \text{Cl} + \text{CCl} \rightarrow \text{Cl}_2 + \text{C}_2\text{Cl}_6 \rightarrow \text{Cl}_2 + \text{C}_2\text{Cl}_5 \rightarrow \text{C}_2\text{Cl}_4 \rightarrow \text{C}_2\text{Cl}_3 \rightarrow \text{C}_2\text{Cl}_2 \rightarrow \text{C}_2\text{Cl} \rightarrow \text{C}_2$$

The assumed polymerization of the intermediate C₂Cl₃ into C₂Cl₄ is in agreement with Ott and Dittus (C.A. 37, 5013).

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<p>CA</p>		<p>10</p>	
<p>Mechanism of the Friedel-Crafts reaction. VI. Reaction of alkyl iodides with benzene. V. V. Korshak and G. S. Kolesnikov (Mendeleev Chem. Tech. Inst., Moscow). J. Gen. Chem. (U.S.S.R.) 17, 1043-4 (1947) (in Russian); cf. C.A. 43, 1217a. — The reaction of benzene with RI in the presence of AlCl₃ was studied with analysis of the HX evolved. In the case of MeI the HCl:HI ratio was 3:1; EtI gave a gas contg. 25.96 mol. % HCl and 74.15 mol. % HI. Similarly, decompn. of n-BuI with AlCl₃ gives 34.17% HCl and 65.83% HI. Mixing HCl in benzene with an equimol. amt. of AlBr₃ in benzene, followed by heating, gave a gas mixt. contg. 75.01 mol. % HBr and 24.99 mol. % HCl. This proves the occurrence of the reaction of HCl with AlBr₃ in benzene. AlBr₃ in warm benzene was slowly treated with an equimol. amt. of HCl or BuCl in benzene, and the gas mixt. evolved was analyzed in 4 separate portions (total time, 1 hr.); with BuCl as addend, the gas compn. varied from 9.31 mol. % HCl and 90.69 mol. % HBr in the initial stage, to 27.76 mol. % HCl and 72.24 mol. % HBr in the final data.; when HCl was the addend, the initial gas was 4.5 mol. % HCl and 95.5 mol. % HBr, going up to 28.26 mol. % HCl and 71.74 mol. % HBr in the final data. This indicates that the process has characteristics of an equil. reaction; both the HX and the RX reactions are very similar. G. M. Konevskii</p>			
<p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>100000 01</p>		<p>100000 01</p>	
<p>100000 01</p>		<p>100000 01</p>	

The reaction of 1,2-dichloroethane with benzene. V. Komrzhak, G. S. Kukurikov, and A. V. Kharchevnikova. *Vysokomol. soed.* (U.S.S.R.), 1969, 21(107) (in French). The condensation products of $(C_2H_5Cl)_2$ (I) and C_6H_6 in the presence of $AlCl_3$ have been studied. Mixts. of 204 g. C_2H_5Cl and 50 g. I were heated 4.5 hrs. at 85° with varying amts. of $AlCl_3$ (0.7, 4, 13.5, and 6.7 g.). The yield of diphenylethane (II) increased in these cases the polymeric condensation product decreased with the use of less $AlCl_3$. When the amt. of $AlCl_3$ used was held constant, but the mole ratio of C_2H_5Cl to I was varied (13.5, 0.7, 3.35, 1.68, 1.10, 0.84, and 0.67), the % yields of II were resp. 68.3, 54.3, 37.0, 12.0, 0, 0, and 0, whereas the yield of II was 0%. The polymeric product was $AlCl_3 \cdot (C_{10}H_8)$. In all other cases, in C_2H_5Cl , I, $MeOH$, products were shown to have up viscosities (4% in C_2H_5Cl) of 0.08-0.14. Oxidation of these products resulted in the formation of terephthalic acid. Hence it was concluded that the polymer was polyphenylethylene.



Dibenzoylacetylene. Georges Darpont and Jean Germain. *Bull. soc. chim. France* 1947, 520-9.—A mixt. of 2 g. BaCl_2 (I) and 16 g. HgCl_2 soln. (satd. in the hrs. on the H_2O bath) with a few drops H_2SO_4 heated several ahrs. after eatn. with R_2O gives an uncrystallizable oil which, (OAc), gives a green ppt. of the Cu salt of the acid form $\text{Ac}(\text{OAc})_2\text{C}_6\text{H}_4$ (II) (from Ca), probably a mixt. of the isomers $\text{Ac}(\text{OAc})_2\text{C}_6\text{H}_4$ (III) (cis and trans) and Ph-

C(OH).CO.CH:CH.O. A similar result is obtained)

with 10 g. AcONa, 50 g. alc., and 3 g. I (cf. Lutz, C.A. 21, 82). I (8 g.) and 1 g. Na in 75 cc. MeOH, heated 5 min. on the H₂O bath and evapd. in vacuo, give, after dissolving the residue in H₂O, acylating, and ratg. the oil with petr. ether, *cis*-III (IV), m. 30.7°. IV is also obtained by heating on the H₂O bath 1 hr., amine deriv. of I (cf. Dupont, C.A. 22, 380) and a slight excess of alc. H₂SO₄. Partial hydrogenation of I in alc. with Raney Ni gives 50% BuCH:CH₂, m. 130-1°. Cyclopentadiene (20 g.) added to 10 g. 1-3,5-glycol, dry H₂O₂ gives 2,5-dihydroxybicyclo[2.2.1]-3,5-heptadiene (VI), m. 112-3°. V (2 g.), the calcd. amt. of NH₃,NH₄,H₂O, and 142 cc. 50% AcOH, heated 5 min. on the H₂O bath, give, after pptn. with H₂O and recrystn. from alc., a pyridazine deriv. (VII), m. 201-2°. V (1 g.), 25 cc. AcOH, and an excess of NH₃,CONH₂,HCl (VIII) and AcONa, heated 1 hr. on the H₂O bath, give a monomercaptanone (VIII), m. 160°, which will not react further with VII. V with Raney Ni absorbs 1 mol. H₂ to give a compd. (IX), m. 132.5°. IX with 5% aq. permanganate gives BuOH and *cis*-1,2-cyclopentanedicarboxylic acid, m. 120° (cf. C.A. 41, 2420), for the structures of V, VI, VIII, and IX).

H. L. May

KORSHAK, V. V.

PA 11T72

USSR/Chemistry - Condensation, chemical 1947
Chemistry - 1, 2-dichloroethane

"The Polycondensation Products of 1, 2-dichloroethane
With Benzene," V. V. Korshak, G. S. Kolesnikov, A. V.
Kharchevnikova, 3 pp

"CR Acad Sci" Vol LVI, No 2

Tables of characteristics. Structural formulae.

11T72

KORSHAK, V. V.

PA 58T4

USSR/Chemistry - Amides, Poly
Chemistry - Synthesis

May 1947

"The Formation of Three Dimensional Structure in Poly-
amides," V. V. Korshak, S. R. Rafikov, Inst Org Chem,
Acad Sci, 4 pp

"Dok Akad Nauk SSSR, Nova Ser" Vol LVI, No 6

Discusses study of so-called "stitching" of macro-
molecules from point of view of importance of use in
technique to obtain new materials with technically
valuable qualities and to improve quality of known
products. Submitted by Academician A. N. Nesmeyanov,
20 Oct 1946.

58T4

V. V. and LEDEDEV, N. N.

"Complex Compounds of Alkyl Halide and Aluminum Halide," Dok. AN, 57, No. 3,
1947

ibid: 57, No. 9, 1947.

000008249200

High-molecular weight compounds. XVI. The poly-
disperity of polyamides. V. V. Kambak and V. A.
Zamyatina. *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim.*
Nash 1048, 412-10; cf. C.A. 42, 7270w. — Two polyamides
were prep'd. by condensation of hexamethylenediamine and
adipic acid. The 1st polyamide (I), had a mol. wt. of
16,200 by η detn. and 16,300 by end-group analysis. The
2nd polyamide (II), made with an excess of adipic acid,
had a mol. wt. of 4440 by η detn. and 5810 by end-group
analysis. A mixt. of equal parts of I and II had a mol. wt.
of 10800 by η detn. and 8810 by end-group analysis. Frac-
tionation of a 2% cresol soln. of the mixt. by addn. of
MeOH produced 2 fractions. The 1st fraction, corre-
sponding to I, had a mol. wt. of 14,410 by η detn. and
17,550 by end-group analysis. The 2nd fraction, corre-
sponding to II, had a mol. wt. of 5120 by η detn. and 3720
by end-group analysis. Another polyamide (III), also
made from a stoichiometric ratio of reactants, had a mol
wt. of 10,400, calcd. from the intrinsic η . The 1.5%
cresol soln. of III was fractionated with MeOH into 5 frac-
tions ranging in mol. wt. from 8500 to 21,300. A poly-
amide (IV) made with excess diamine had a mol. wt. of
9200, calcd. from the intrinsic η . The 2.6% cresol soln. of
IV was fractionated with MeOH into 6 fractions ranging
in mol. wt. from 2800 to 10,800. Mol. wt. distribution
curves showed III to be mostly in the 10,000-20,000 range,
with a significant fraction of much lower mol. wt., while
IV spread over a broad mol. wt. range without any pro-
nounced max. The homogeneity of polyamides is affected

by the fact that degradative (chain breaking) reactions
can occur at the same time as condensation. The final
mol. mixt. represents a resultant of the various reactions.
Fractionation of polyamides does not necessarily proceed
in a manner governed by the mol. wt. of the polymer mols.
but is also affected by the nature of the end groups on the
polymer mols. Alk. soly in cresol MeOH mixts is
observed with hydrocarbon groups, max soly with amino
groups, whereas the carboxy groups have av. soly.

H. K. Livingston

KORSHAK, V. V.

USSR/Chemistry - Amides, Poly
Chemistry - Distillation

Jul/Aug 48

"Studies in the Field of High-Molecular Compounds," V. V. Korshak, V. A. Zamyatina,
Inst Org Chem, Acad Sci USSR, 7½ pp

"Is Ak Nauk SSSR, Otdel Khim Nauk" No 4

Describes fractioning of polyamides from solutions in cresol by precipitation with methyl alcohol. Constructs distribution curve. Establishes that polyamides are fairly uniform products containing only small quantities of low-molecular fractions and, therefore, the mean value of the molecular weight, determined by viscosity of solutions, represents the basic constituent of the polyamide fairly accurately. This uniformity, evidently, distinguishes the polyamides from high-molecular substances obtained by polymerization. Submitted 20 Nov 1946.

PA 8/49T15

KORSHAK, V. V.

Nov/Dec 48

USSR/Chemistry - Condensation, Chemical
Chemistry - Molecular Weights, Determination

"Research in the Field of High Molecular Compounds: XVII, Distribution of
Polyesters According to Molecular Weight," S. R. Rafikov, V. V. Korshak, G. N.
Chelnokova, Inst Org Chem, Acad Sci USSR, 10 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6 p 642-651

Investigated reaction of polycondensation in adipic acid with glycols. Separated
polyesters obtained into fractions, and determined their molecular weight by chemical
and viscosimetric methods. Data obtained was used for consideration of the reaction
mechanism of linear polycondensation. Submitted 19 Jul 47.

PA 33/49 T23

KORSHAK, V. A.

High-molecular weight compounds. XV. Products of polycondensation of 1,2-dichloroethane with benzene. V. V. Korshak, G. S. Kolesnikov, and A. V. Kharchevnikova (Mendeleyev Chem. Tech. Inst., Moscow). *J. Gen. Chem. (U.S.S.R.)* 18, 108-204 (1948) (in Russian). — The reaction of C_6H_6 and $(CH_2Cl)_2$ in the presence of $AlCl_3$ was shown to be affected by variation of the relative amts. of the components. Oxidation of the polyphenylethyl (polycondensation product) by Cr oxide gives terephthalic acid, indicating that the polymer is made of Ph nuclei joined by CH_2CH_2 links in para positions. C_6H_6 (264 g.) and 50 g. $(CH_2Cl)_2$ were treated with 67.4-6.7 g. $AlCl_3$ 4.5 hrs. on a steam bath; the yield of the polymer dropped with smaller amts. of $AlCl_3$ (from 37.7 g. to 16 g.) but its nature was not changed; it was still a homogeneous mass, sol. in C_6H_6 . In a 2nd series the $AlCl_3$ and C_6H_6 were held const. (amts. not given) while the $(CH_2Cl)_2$ was varied from 25 g. to 500 g. (mol. ratio to C_6H_6 from 13.5 to 0.87); as the amt. of the dichloride increases, the amt. of $(Ph-CH_2)_2$ drops and reaches zero at mol. ratios below 1 (the reaction time had to be reduced from 4.5 hrs. to 1-2.5 hrs. in these runs because of excessive foaming); the amt. of the polymer, however, constantly rises, from 6.2 g. to 300 g. Only when the ratio of C_6H_6 to the dichloride drops lower than 1.1 does the polymer change its properties; it becomes insol. in C_6H_6 . The mol. wt. of the polymer (by viscosity in benzene) remains in the 1200-1300 range until

the above ratio reaches 1.08, when the mol. wt. of the product climbs to 2100. When the polymer (3-7 g.) was boiled 7-18 hrs. with 80 cc. H_2O , 100 g. H_2SO_4 , and 40 g. $K_2Cr_2O_7$, only terephthalic acid was isolated. This also occurred when the benzene-insol. polymer was oxidized. The formation of the insol. polymer is readily explained by the fact that with the proportions used all the C_6H_6 reacts to form the polymer and the latter is then able to condense further with the dichloride through reaction in the ortho position, leading to 3-dimensional mols. by cross linking.

G. M. Kosolapoff

6

Chlorination of sulfamic acid. V. V. Korshak, N. N. Lebedev, and K. V. Borisova. *Zhur. Obshch. Khim.* (J. Gen. Chem.) 18, 753-6 (1948).—Sulfamic acid is totally decompd. in alk. medium under action of Cl or NaOCl soln., with liberation of free N; the intermediate decompn. products (mono- and dichlorosulfamic acids) have very short life in the soln. The decompn. in alk. medium may be represented by: $2\text{NaOSO}_2\text{NCl}_2 \rightarrow \text{NaOSO}_2\text{NCl} + \text{NClSO}_2\text{ONaOH} + 2\text{Na}_2\text{SO}_4 + 2\text{NaCl}$. When chlorination is

done in acid soln. the reaction does not apparently stop at the dichloro stage but proceeds to trichloro acid; the latter immediately decomposes into NCl_3 and H_2SO_4 . To 240 g. ClSO_3H was gradually added 60 g. $(\text{NH}_4)_2\text{CO}$ with cooling and stirring; after 2 hrs. at 75° or 0.75 hr. at 86°, the mass was poured into ice-water to give 75 g. $\text{H}_2\text{NSO}_3\text{H}$, m. 210° (from H_2O). To 40 g. concd. H_2SO_4 was added 15 g. $(\text{NH}_4)_2\text{CO}$ with cooling and stirring, followed by 80 g. 43% oleum; the mixt. was heated to 100-5°, cooled, and the resulting $\text{H}_2\text{NSO}_3\text{H}$ (I) (83%) was filtered off and washed with little water; it m. 204-5° (from water). Addn. of NaOCl to aq. soln. of I immediately produces foaming and liberation of N; the same results when Cl is

passed into alk. soln. of I. In both cases the 2nd product is H_2SO_4 . Even an insufficient amt. of NaOCl produces the same result. In a quant. expt. 1 g. sulfamic acid gave, in 3 days, 92 ml. N (79.65%). When Cl is passed into aq. soln. of I the soln. becomes warm and colorless, then rapidly clouds and turns yellow with simultaneous deposition of yellow oily NCl_3 , which constantly liberates a gas. Attempts to isolate the intermediate products, before the deposition of NCl_3 , failed. (G. M. Kosolapoff

KORSHAK, V. V.

PA 19/49T12

USSR/Chemistry - Friedel-Craft's Reaction
Chemistry - Vinylidene Compounds

AUG 45

"Friedel-Craft's Reaction: VII, Reaction of Vinylidene Chloride With Benzene," V. V. Korshak, K. K. Samplavskaya, Moscow Ord of Lenin, Chemicaltech Instiment D. I. Mendeleev, 4 1/2 pp

"Zhur Obshch Khimii" Vol XVIII (LXXX), No 8

Previously established pronounced difference in type of reaction of olefinic part of molecule in vinyl chloride or acetate on one hand, and vinyl butyl ether in presence of aluminum chloride on the other hand. Disubstituted ethylenes now investigated on

19/49T12

USSR/Chemistry - Friedel-Craft's Reaction (Contd) AUG 45

example of vinylidene chloride. It reacted with benzene in ratio 1:8 in presence of 12-200% aluminum chloride, and yielded 35% theoretical 1,1-diphenylethylene and 45% theoretical of its dimer, 1,1,3-triphenyl-3-methylhydride. Limitation of polymerization to dimer is explained by steric hindrance. Submitted 7 Mar 47.

19/49T12

KORSHAK, V. V.

V. V. Korshak and N. N. Lebedev, On the mechanism of the Friedel-Krafts reaction. VIII. On the structure of complex compounds of aluminum halides with alkyl halides. p. 1766.

The absorption of ultra-violet rays by solutions of aluminum bromide in ethyl bromide was investigated and it was found that this solution absorbs better than the pure solvent. The content of various hydrogen halides in gases evolved during the Friedel-Krafts reaction were also investigated. (This article has a bibliography of 43 entries.)

The Mendeleev Moscow Chemical Technological Inst., Holder of the Lenin Order
October 15, 1947

SO: Journal of General Chemistry (USSR) 28, (80) No. 10 (1948):

Role of stereochemical factors in polymerization processes. V. V. Korshak and K. K. Samoilovskaya (D. I. Mendeleev Chem. Tech. Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.* 99, 497-500 (1969). —A survey of substituted ethylenes capable of not of polymerization demonstrates an absence of any relation between polymerizability and polarity of the substituents or symmetry of the substitution.

Thus, PhCH=CH_2 , $\text{Me}_2\text{C=CH}_2$, ClCH=CH_2 , $\text{Cl}_2\text{C=CH}_2$, and PhC=CH_2 polymerize, whereas BrC=CH_2 , ClC=CCl , PhC=CCl , ClC=CCl , do not. The steric factors are, rather, stereoregular. In the first place, polymerizability is decided by the size of the substituent group. If and F do not hinder polymerization, so neither does high the degree of substitution. In the case of Cl and Br, only mono- and asymmetrically substituted ethylenes polymerize; CH_3 has the same effect as Cl; in the case of Ph only the unsymmetrical derivative (styrene) is polymerizable. The steric nature of the effect is seen clearly in polyphenylated butadienes where Ph. blockers polymerize only if it is substituted in positions 1 and 4, that is at the points active in polymerization; it has no effect if substituted in positions 2 or 3. Another effect of the steric factor is expressed in an early breaking off of the polymerization chain along the first stage has preceded unsaturated, the reaction stopping at the dimer or trimer. Examples are PhC=CH_2 , ClCH=CHCl , MeC=CHCl , $\text{CH}_3\text{C=CHMe}$, MeC=CHMe . Polymerization of PhC=CH_2 (Korshak and Samoilovskaya, C.A. 54, 449) can be conceived as proceeding over the intermediate



which, owing to stresses due to repulsion between the Ph groups, rather than polymerize with another PhC=CH_2 monomer, will isomerize into either

$\text{H}_2\text{C=CHPh}$ or PhC=CHCMePh , the latter polymerizing readily into



In this case, the stereoregular effect brings about early rupture of the chain. The same point of view is applicable to instances where a complex is incapable of polymerization but does copolymerize.

Inst. of Org. Chem. AS & Moscow
Chemico-Tech. Inst. im. D. I. Mendeleev

KORSHAK, V. V.

"Degree of Polydispersion of Polyamides," Dok. AN SSSR, Nova Ser., 59, No. 5,
1948.

Inst. Org. Chem., AS USSR.

GOLOVA, O.P., IVANOV, V.I., KORSHAK, V.V., doktor khimicheskikh nauk,
redaktor; SHEVCHENKO, U.B., tekhnicheskiiy redaktor.

[Molecular weight of cellulose] O molekuliarnom vese tselliu-
lozy. Moskva, Izd-vo Akad. nauk SSSR, 1949. 114 p. (MLRA 8:8)
(Cellulose)

"APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000824920019-6

MEMORANDUM FOR THE DIRECTOR, CIA
SUBJECT: [Illegible]
DATE: 4 44 1984
[Illegible text follows]

APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R000824920019-6"

Significance of proportion of starting materials in the process of linear polycondensation. V. V. Korshak, V. V. Golubev, and G. S. Kosolapoff (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Issledovaniya v Oblasti Vysokomolekul. Soedinenii, Doklady 6-oi Konf. Vysokomolekul. Soedineniyum, Akad. Nauk S.S.S.R. 1949*, 22-23. - The ratio of starting materials is considered in general and specific cases of polycondensation reactions from a kinetic viewpoint, in which it is shown that the excess of either component leads to a sharp decline of the av. mol. wt. of the polycondensation product. The data are taken from earlier publications, largely of the authors. 14 references. G. M. Kosolapoff

R

2

Problems of classification in the chemistry of high-molecular weight compounds. V. V. Korshak, *Izvestiya Akad. Nauk S.S.S.R. Seriya Khim. Nauk*, 1949, 90-101. —The classification of high polymers according to their chem. nature and structure of the monomeric units is discussed, with distinction being made between the C-chain and hetero-chain substances. G. M. Kosolapov

AA SW

KORSHAK, V. V.

G. N. Chelnokova, S. R. Rafikov and V. V. Korshak

"From the Field of Macromolecular Compounds, 19th Report: The Determination of the Mean Molecular Weight of Polyesters from the Endgroups." Reports of the Academy of Sciences, USSR, Department of Chemical Sciences, 1949, 205-11, April; Institute for Organic Chemistry of the Academy of Sciences, USSR.

ABSTRACT AVAILABLE

D-50054

KORSHAK, V. V.

PA 27/49T22

USSR/Chemistry - Molecular Weights,

Jan/Feb 49

Calculation of Average
Chemistry - Polymers, Molecular Weights of

"Study in the Field of Compounds of High Molecular Weight: VIII, Average Molecular Weights of Polymer Homologues," S. R. Rafikov, V. V. Korshak, G. N. Chelnokova, Inst Org Chem, Acad Sci USSR, 6 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 1

Considers influence the degree of polydispersion in compounds of high molecular weight has on average molecular weight, which is determined by various chemical and physicochemical methods.

27/49T22

USSR/Chemistry - Molecular Weights;
Calculation of Average (Contd)

Jan/Feb 49

Introduces method of theoretical determination of average molecular weight, correctness of which is confirmed by investigating synthetic mixtures of polyesters. Introduces concept of a coefficient of polydispersion, by which the product may be determined. Shows graphic method of expressing the coefficient of polydispersion. Considers possibility of using this method to evaluate the mechanism of reaction. Submitted 20 Nov 47.

27/49T22

KORSHAK, V. V.

"Synthesis and Investigation of High Molecular Compounds," Vest. Ak. Nauk SSSR No. 3, 1949.

KORSHAK, V. V.

PA 56/49T18

USSR/Chemistry - Ethylene
Chemistry - Polymerization

May/Jun 49

"High-Molecular Compounds: XX, Effect of the Number and Nature of the Substitutes on the Polymerization Capacity of Substituted Ethylenes," V. V. Korshak, Inst of Org Chem, Acad Sci USSR, 5 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 3

Shows that size and number of substitutes determine the stage of a screening effect, by which these substitutes influence polymerization capacity. Suggests a diagram explaining the dimerization of 1, 1-diphenylethylene. Submitted 20 Sep 48.

56/49T18

KORSHAK, V. V.

PA 63/4978

USSR/Chemistry - High Molecular Compounds

Jul/Aug 49

"Research in the Field of High Molecular Compounds: No XXI (1), Polycondensation of Glycol With Adipic Acid," V. V. Korshak, V. V. Tolubey, Inst of Org Chem, Acad Sci USSR, 61 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 4

Study of polycondensation of ethyleneglycol, with an excess of adipic acid showed that molecular weight of the derived polyesters was decreased as excess of adipic acid was increased. Derived formula for this relation. Considered acidification by

63/4978

USSR/Chemistry - High Molecular Compounds (Contd) Jul/Aug 49

heating with adipic acid and glycolization of the polyester in turn. Gives a formula to express the relation between molecular weight of the polyester and quantity of acid required to acidify it. Submitted 20 Nov 48.

63/4978

USSR/Chemistry - High-Molecular
Compounds
Polymerization

Sep/Oct 49

"Field of High-Molecular Compounds: XXII. Effect
of the Polarity of Substituents on the Polymeriza-
tion Ability of Substituted Ethylenes," V. V.
Korshak, Inst of Org Chem, Acad Sci USSR, 5 $\frac{1}{2}$ pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 5

Experiments showed that polymerization capacity of
substituted ethylenes is increased as a result of
polarization of the double bond under influence of
the substituent and that polymerization tendency of

149716

USSR/Chemistry - High-Molecular
Compounds (Contd)

Sep/Oct 49

monosubstituted ethylenes is connected with polarity
of substituents. Establishes connection between
dipole moments of vinyl compounds and their tendency
to polymerize, and explains regular structure of
polyvinyl derivatives as result of polarization
effect of substituents. Introduction of polar
substituents attached to carbon of a carbonyl group
decreases tendency of compound to polymerize. Shows
polymerization tendency of cyclic amines and ethers
to be dependent on polarity of bonds of heteroatom.
Submitted 20 Nov 47.

149716

PAL49716

KORSHAK, V. V.

38013. KORSHAK, V. V., FREYDLINA, R. KH., AND KABACHNIK, M. I.

AKADYEMIK ALEKSANDR NIKOLAYEVICH NYESMEYANOV /KHIMIK K 50-LYETIYU SO DNYA
ROZHDYENIYA⁷ IZVVESTIYA AKAD. NAUK SSSR, OTD-NIYE KHIM. NAUK, 1949,
No. 6, S. 562-66 S Portr.

KORSHAK, V. V.

PA 65/49T24

<p>Chemistry - Friedel-Crafts Reaction</p> <p>Benzenes</p>	<p>Apr 49</p>
<p>Mechanism of the Friedel-Crafts Reaction: II. The Reaction of Trichloroethylene With Benzene, V. V. Korshak, K. K. Samplavskaya, M. A. Andreyeva Moscow. Khimicheskii Inst. imeni D. I. Mendeleeva, 3/4 pp</p>	
<p>"Zhur Obshch Khim" Vol XIX, No 4</p>	
<p>Study of subject reaction in the presence of aluminum chloride shows that polynuclear products of condensation are similar to those formed when 1,1-diphenyl-2-chloroethylene is substituted for the</p>	
<p>Chemistry - Friedel-Crafts Reaction (Org. Chem.)</p>	<p>Apr 49</p>
<p>Trichloroethylene. In the case of the latter, they are diphenylmethane, triphenylmethane, and benzene. Submitted 30 Dec 47.</p>	
<p>65/49T24</p>	

KORSHAK, V. V.

Chemistry - Benzyl Chloride Apr 49
High-Molecular Compounds

"The Field of High-Molecular Compounds: XIII,
Polycondensation of Benzyl Chloride," V. V. Korshak,
M. N. Lebedev, M. A. Tsipershteyn, Moscow Chemico-
technol Inst. imeni D. I. Mendeleev, 6 $\frac{1}{2}$ pp

"Zhur Obshch Khim" Vol. XIX, No 4

Studied this reaction in the presence and in the
absence of benzene, the molecular weight of the
product formed being decreased as the amount of
benzene is first introduced. Shows that the clos-
ing link in the chain of the macromolecule is the
dihydroanthracene ring. Submitted 4 Dec 47.

65/49T23

KORSHAK, V. V.

S. R. Rabinovich
APPROVED FOR RELEASE: 06/14/2000

CIA-RDP86-00513R00082492001

"Investigations in the Field of Highmolecular Compounds. 25th report: The
Mechanism of the Reaction of Linear Polycondensation." Journal of General
Chemistry, 19, (81) 2109-17, November 1949. Institute for Organic Chemistry
of the Academy of Sciences, USSR.

ABSTRACT AVAILABLE

D-50054

АУТОМАТ, . . .

PA 25/49T7

USSR/Chemistry -- Kinetics
Chemistry -- Esterification

Jan 49

"The Problem of Reaction Kinetics in Polyesterification," S. R. Rafikov, V. V. Korshak, 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 2

Investigates reaction kinetics of polyesterification for the case of interaction of adipic acid with decamethyleneglycol and ethyloneglycol. Concludes that reaction speed of polyesterification will depend not upon chain's length, but upon concentration of free groups capable of reaction. Submitted 7 Oct 48.

25/49T7

KORSHAK, V. V.

USSR/Chemistry - Amides, Formation
Chemistry - Hydrolysis

Jan 49

"The Kinetics of Amid Formation and Hydrolysis," G. N. Chelnokova, S. R. Rafikov,
V. V. Korshak, 3 pp

"Dok Ak Nauk SSSR". Vol LXIV, No 3

Kinetic study of the reaction of sebacic acid with hexamethylenediamine under varying
conditions (temperature and catalysis). Submitted 8 Oct 48

PA 27/49T7

Feb 49

USSR/Chemistry - Molecular Weights,
Variations of

Chemistry - Cellulose, Hydrolysis of

"Variations in the Molecular Weight of Compounds
With a High Molecular Weight in the Process of
Chemical Destruction," V. V. Korshak, Inst Org Chem
Acad Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 4

Attempts to make Freudenberg and Kuhn's theory
applicable to the first stages of the destructive
process. This theory stems from representations
of infinitely long chains of the parent substance,

27/49T12

Feb 49

USSR/Chemistry - Molecular Weights,
Variations of (Contd)

and was successfully applied in the case of complete
destruction of cellulose as a result of hydrolysis.
Submitted 9 Sep 48.

27/49T12

PA 27/49T12

KORSHAK, V. V.

KORSHAK, Vasilii Vladimirovich

[Chemistry of high-molecular compounds] Khimiia vysokomole-
kuliarnykh soedinenii. Moskva, Izd-vo Akad.nauk SSSR, 1950.
528 p. (MIRA 14:7)

(Macromolecular compounds)

21

High-Molecular-Weight Compounds. XXIV. (1). Causes of Cessation of Chain Growth in Polycondensation Reactions. XXVI. (1). One Peculiarity of the Process of Chemical Disintegration of High-Molecular-Weight Compounds. (In Russian.) V. V. Koshak. *Izvestiya Akademii Nauk SSSR (Bulletin of the Academy of Sciences of the USSR), Section of Chemical Sciences, Jan.-Feb. 1950, p. 47-55.*

First article presents and discusses results of investigation of typical types of above reactions. In the second article, the problem of change of coefficient of polymerization and molecular weight of high polymers during chemical disintegration is studied. Experimental data are tabulated and charted. 24 ref.

ABSTRACTS
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<p>Sgt L.</p>		<p>Synthetic Rubber and Allied Products</p>	
<p>Chemical degradation of high-molecular compounds. V. V. KONTMAN. <i>Izvest. Akad. Nauk S.S.S.R., Otdel Khim. Nauk</i>, 1950, Jan./Feb., p. 51 0; <i>Kunststoffe</i>, 1951, 41, 165. In this theoretical study of the degradation processes of high-molecular substances the author assumes that during degradation an equilibrium process takes place dependent on the amount of degrading agents added. He also finds that as a result of degradation processes the higher-molecular portions are altered to a greater extent.</p>			
<p>July '51</p>		<p>3514</p>	
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LA 10

Mechanism of the Friedel-Crafts reaction. X Mechanism of the catalytic action of aluminum chloride. V. V. Korshak and N. N. Lebedev (Mendeleev Chem.-Tech. Inst., Moscow). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 20, 268-70 (1950); cf. *C.A.* 44, 3470b.—The catalytic action of $AlCl_3$ and related Friedel-Crafts reaction catalysts is explained by the presence of a powerful dipole in the catalyst, especially when the twinned mol. Al_2Cl_6 is considered, which is given the highly dipolar $AlCl_3 \cdot AlCl_3$ structure, and induces strong polarization in the reactant mols. This is believed to be the important

step in the usual aromatic reactions catalyzed by the metal halides of this type. The action of $BF_3 \cdot Et_2O$ is similar, being due to dipole formation between pos. O and neg. B atoms.
G. M. Kosolapoff

High-molecular weight compounds. XXVI. Polymerization of vinyl iodide and some properties of 1,2-diodoethane. V. V. Korschuk, K. K. Samplavskaya, and N. M. Dovol'skaya (Institute of Mendeleev Chem.-Technol. Inst., Moscow). *Zhur. Obshchei Khim. (J. Gen. Chem.)* 20, 2880-4 (1946); cf. *C.A.* 44, 7317i; 45, 1813e. — $\text{C}_2\text{H}_3\text{I}$ passed rapidly through an absorption train contg. 500 g. iodine with 150 ml. 80% EtOH and irradiated with a 1000-w. bulb was gradually transformed into $(\text{C}_2\text{H}_3\text{I})_n$, yellow needles, which, after washing with aq. KI and drying, m. 79° (yield 20-50 g.). $(\text{C}_2\text{H}_3\text{I})_n$ (140 g.) and 40 g. NaOH in 350 ml. EtOH heated on a steam bath gave 10.82 l. gas contg. 87% C_2H_4 , tar, and CHI_3 . Careful warming of 11.5 g. $(\text{C}_2\text{H}_3\text{I})_n$ with 40 ml. 0.8% KI in Me_2CO gave 0.58 l. (63%) C_2H_4 ; in EtOH 36% is obtained; NH_4CNS in EtOH gave 19.7-40.2%. Slow addn. of 178 ml. 3 N KIO_3 in EtOH to 150 g. $(\text{C}_2\text{H}_3\text{I})_n$ gave 14.5 l. gas contg. 81.6% C_2H_4 , and 1-1.5 g. CHI_3 ; CHI_3 b. 56°. Heating the latter (0.7 g.) with 1.5 ml. 0.1 N $\text{Na}_2\text{S}_2\text{O}_3$ at 180° (unstated time) caused polymerization to a dark crumbly solid, sol. in CCl_4 and partly sol. in $(\text{CH}_3\text{CH}_2)_2$ or $(\text{CH}_3)_2\text{Br}_2$. Heating 150 g. $(\text{C}_2\text{H}_3\text{I})_n$ with 130 g. KOH, 250 ml. H_2O , and 500 ml. EtOH to 60-5° (finally to 70-5°) gave 63% $\text{CH}_2=\text{CHBr}$, b. 16°. This (16 g.), let stand 7-10 days with 0.032 g. H_2O_2 , gave 2-2.5 g. solid polymer; after 2 months a 100% yield is obtained; the polymer is a colorless crumbly solid, decomp. 120°, soly. in $(\text{CH}_3)_2\text{Br}_2$ 2, PhCl 1, cold dioxane 0.05, hot dioxane 0.6, $(\text{CH}_3\text{CH}_2)_2$ 0.5, PhCH_2Cl 0.2, EtBr 0.3%, poorly sol. in CS_2 and PhNO_2 , insol. in EtOH , Et_2O , or Me_2CO . Boiling 3 g. polymer with 9 g. KOH in 500 ml. dioxane 16 hrs. gave 2 g. hydrolysis product contg. 8.5% Hr . The cause of the poor polymerization of $\text{C}_2\text{H}_3\text{I}$ is the liberation of iodine, which acts as an inhibitor, and preventives, such as fine Ag or BF_3 , were ineffective. G. M. Kosolapoff

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High-molecular weight compounds XXVIII. Action of hydriodic acid on ethylene glycol and its polyesters. V. V. Korshak and S. A. Pavlova (Acad. Sci. U.S.S.R., Moscow). *Izv. Akad. Nauk S.S.S.R., Khim. Nauk* 1950, 76-7; cf. C.A. 44, 7218a. —Boiling 10 g. $(\text{CH}_2\text{OH})_2$ with 100 ml. HI (b. 125-7°) gave 0.5 l. gas, identified as C_2H_6 , formation of dibromide; distn. of the residual liquid gave a fraction b. 110-12°, which yielded a small amt. of poorly stable $(\text{CH}_2\text{I})_2$, m. 81°; no RI was detected (cf. Grün and Bockisch, C.A. 3, 179). Hence, the reaction proceeds by formation of $(\text{CH}_2\text{I})_2$ which decomp. into I and C_2H_6 , and the Zeisel detn. fails with glycol. Attempted use of the method for the detn. of EO groups terminating polyesters of glycol with dicarboxylic acids similarly failed and gave erratic results. Evidently, the polyesters were hydrolyzed by HI, forming $(\text{CH}_2\text{I})_2$ which then decompd. as above.

XXIX. Polyhydrazones. V. V. Korshak and E. A. Porzhitsova. *Ibid.* 412-17. —Condensation of $(p\text{-H}_2\text{NNHC}_6\text{H}_4)_2$ (I) with dicarbonyl compds. gave polymers. A closer study of the reaction with Ac_2O showed that excess of the latter lowered the mol. wt. of the resulting polymer. Benzidine (18.0 g.) in 24 ml. 30% HCl and 100 ml. hot H_2O , cooled to 30-40°, treated with 50 g. ice, followed by 24 ml. concd. HCl aq. with 24 ml. H_2O , cooled to -10°, and diazotized rapidly by 70 ml. 20% NaNO_2 (the temp.

may rise to 12°) gave a nearly neutral soln.; addn. of the diazotate soln. to 120 g. SnCl_2 in 200 ml. concd. HCl (after cooling) gave a vigorous reaction (much foam), which was completed by 2 hrs. on a steam bath; diln. with H_2O , heating, and cooling gave 50% I HCl salt, which forms a tar very readily. Alternative reduction: the diazotate soln. is added to a cooled satd. aq. soln. of 150 g. NaSO_3 ; diln. with much H_2O , heating, treatment with Zn-AcOH , filtration, cooling, and addn. of HCl, gave 48% I HCl salt, yellow-red solid which could not be recrystd. Although I condenses with aldehydes in various solvents, the following was the best procedure: 1 g. CH_3Ac , and 2.14 g. I in 15 ml. AcOH stirred 2 hrs. on a steam bath and dil. gave 0.6 g. brown solid, m. 320-40°, mol. wt. (cryoscopic in C_6H_6) 3578, (by viscosity) 5629. Ac_2O similarly gave the polyhydrazones in unstated yield, whose mol. wt. (in dioxane) ranged from 3840 to 1245 when the amt. of Ac_2O was raised from 0% excess to 50% excess over theory; the product did not melt. $p\text{-C}_6\text{H}_4(\text{CHO})_2$, m. 120-4° (0% from $p\text{-C}_6\text{H}_4(\text{COCl})_2$ by heating with Pd in xylene in a stream of H at 150°; the chloride, m. 77-0°, b. 238-63°, was obtained in 85% yield by heating the acid with $\text{PCl}_5\text{-POCl}_3$ 6 hrs., followed by 12 hrs. standing), with I also gave a low yield of polyhydrazones, m. 206-22°, mol. wt. (in dioxane) 2782. G. M. K.

CA

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New type of linear polycondensation reaction trans-
arylation. V. V. Korshak and G. S. Kolesnikov (Acad.
Sci. U.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 70,
623 7 (1950); cf. C.A. 42, 515b.—Heating $(\text{PhCH}_2)_2$ with
 AlCl_3 in a dry C_6H_6 stream to 110° and 140° until C_6H_6
evolution stopped gave, after washing and distn., about
6% unreacted material, the rest being "polyphenylene-
ethyl," i.e. apparently a linear polymer with $\text{CH}_2\text{CH}_2\text{C}_6\text{H}_4$
repeating units and Ph chain terminations; this was puri-
fied by pptn. with MeOH from C_6H_6 and had a mol. wt
of 3800–4000 when made at 110° or 3800–4200 if made at
 140° . Its oxidation with Cr oxide gave terephthalic acid.
The product treated with much C_6H_6 during the reaction
undergoes "benzoyls," i.e. chain scission. G. M. K.

IVANOV, V.I., doktor tekhnicheskikh nauk; KORSHAK, V.V., doktor khimicheskikh nauk, otvetstvennyy redaktor; KOROBITSYNA, I.L., redaktor izdatel'stva; KISELEVA, A.A., tekhnicheskiy redaktor

[Macromolecules] Molekuly-giganty. Moskva, Izd-vo Akademii nauk SSSR, 1951. 116 p. (MIRA 9:11)
(High molecular weight compounds)

CA 12

High-molecular-weight compounds. XXXV. Role of alcoholysis in polyesterification. V. V. Korshak and S. V. Vinogradova (Acad. Sci. U.S.S.R., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk* 1951, 63-9; cf. *C.A.* 45, 7553c. — The kinetics of the alcoholysis of Et stearate (I) by cetyl alc. (II), $C_{18}H_{37}CO_2Et + C_{18}H_{37}OH \rightleftharpoons C_{18}H_{37}CO_2C_{18}H_{37} + EtOH$, is investigated as a model of the alcoholytic side reaction assumed to accompany polycondensation and, along with acidolysis and ester exchange, to break the growth of the polycondensation chain. The progress of the reaction was followed by extn. of the EtOH formed with H_2O and its oxidation with $K_2Cr_2O_7$ to AcOH. With equimol. amts. of I and II and concd. H_2SO_4 (1% of the wt. of I) as a catalyst, the 2nd-order rate consts. at 122, 168, and 183° were: for the forward reaction, 0.510, 0.888, and 1.300, and for the back reaction, 1.315, 1.089, and 0.545 g. hr.; the equil. consts. = 2.638, 1.170, and 0.303. With $C_{18}H_{37}ONa$ (1% of the wt. of I) as a catalyst, at 183 and 250°, the 2nd-order rate consts. for the forward reaction, are 0.126 and 0.536, and for the back reaction, 0.427 and 0.228 g. hr.; the equil. consts. 3.140 and 0.420. Without catalyst, at 250°, rate consts.: forward 0.212, back reaction 0.060; equil. const. 3.000. Activation energies, in the temp. ranges 122-188°, 122-168°, and 168-183°, with H_2SO_4 , for the forward reaction, 1010, 571, and 12,050 cal.; for the back reaction, -830, -270, and -10,370 cal.; with $C_{18}H_{37}ONa$, in the temp. range 183-250°, forward 2700, back reaction -1173 cal. With H_2SO_4 , at 183°, the conversion attains 61.5%; with $C_{18}H_{37}ONa$, at 250°, 96.6%; without catalyst, at 250°, 36.3%. Alcoholysis undoubtedly plays a nonnegligible role in the polycondensation of glycols with dicarboxylic acids. N. Thon

KORSHAK, V. V.

V. V. Korshak and S. V. Vinogradova, High molecular compounds. 36. The importance of acidolysis in the reaction of polyesterification. P. 179.

Inst. of Organic Chem.

Acad. of Sci., USSR.

March 20, 1950.

SO: Bulletin of the Acad. of Sciences, Izvestia (USSR) Section on Chemical Sciences, No. 2. (March-April 1951).

C.A.

Studies in the field of high-molecular compounds
 - XXXVII. Role of the exchange reaction between esters in the polyesterification process. V. V. Kozlovskiy and S. V. Vinogradova (Inst. Org. Chem., Acad. Sci. U.S.S.R., Moscow). *Izv. Akad. Nauk S.S.S.R., Otd. Khim.* 1951, 314-8; cf. C.I. 45, 8975g. — The rate of the ester exchange reaction, $\text{C}_{17}\text{H}_{33}\text{O}_2\text{Rt}(\text{stearate}) + \text{AcOC}_{17}\text{H}_{33}(\text{cetyl}) \rightarrow \text{C}_{17}\text{H}_{33}\text{O}_2\text{C}_{17}\text{H}_{33} + \text{AcORt}$, was investigated by rxn. of AcORt with H_2O . With equimol. amts. of the 2 esters, and with H_2SO_4 (1% of the wt. of the stearate) as a catalyst, the amts. of AcORt formed were: at 123°, in 1, 2, 4, 6 hrs., 18.3, 21.2, 30.4, 30.7%; at 168-9°, in 1, 2, 3, 4, 5, 6 hrs., 21.7, 26.9, 32.4, 40.0, 48.7, 48.7%; at 183-4°, in 1, 2, 3, 4, 5 hrs., 26.8, 41.0, 51.5, 53.5, 51.5%; at 230°, in 1, 2 hrs., 32.1, 38.2%; after 2 hrs. at 250°, the reaction mixt. underwent decompn. Without catalyst, at 183-4°, in 1, 3, 5, 6 hrs., 0, 10.3, 13.4, 13.5%; at 250°, in 1, 2, 3, 4, 6 hrs., 4.7, 11.5, 13.9, 14.0, 15.5%. With NaOH (1% of the wt. of the stearate), as a catalyst, at 183-4°, in 1, 2, 3, 4, 5 hrs., 7.0, 10.4, 13.0, 18.7, 25.3%. The equil. const. K , and the rate consts. k_1 and k_2 of the forward and the backward reaction, calc'd. from these data, are: with H_2SO_4 as a catalyst, at 183°, $K = 0.097$, $k_1 = 0.299$, $k_2 = 0.2005$; at 168°, 1.100, 0.375, 0.330; at 123°, 3.140, 0.257, 0.805; without catalyst, at 250°, 29.600, 0.090, 2.110; at 183°, 41.000, 0.050, 2.040. The activation energies for the forward and backward reactions, with H_2SO_4 , in the range 168-183°, 1370 and -14125 cal./mole; 122-168°, 10140 and -935; 122-183°, 116 and -1410; without catalyst, 183-250°, 875 and -1030 cal./mole. Ester exchange reactions play a major role in polyesterification processes.
 N. Thon

High-molecular compounds. XXXVIII. Polyamides from 4,4'-diaminodiphenylmethane and dicarboxylic acids. V. M. Koshak and S. V. Rogoshin. *Izv. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk*, 1961, 286-6; *cf. ibid.*, 1947, 109; *C.A.* 46, 1440d, 2880d. — (*p*-H₂N-C₆H₄-CH₂-NH₂, m. 123-4° (from the dinitro aniline with HCl), does not form salts with aliphatic dicarboxylic acids. Heating equimolar amounts of the diamine and adipic acid 15 min. to 180° gave an insol. polyamide, m. above 400°, also formed on condensation in creosol as solvent. Sebacic acid forms a similarly insol. polyamide, m. 280°, which decomp. extensively on melting with swelling; the swelled product absorbs creosol but does not dissolve in it appreciably; a similar product is obtained by condensation in solvent system at 200°. XXXIX. Condensation of benzene with 1,2-dichloroethane. G. S. Kolesnikov, V. V. Koshak, and T. V. Smirnova. *Ibid.*, 588-900. — Addn. of (CH₂Cl)₂ to C₆H₆ and AlCl₃ at room temp., heating 4 hrs. on a steam bath, hydrolysis, and evapn. of the C₆H₆ gave products contg. (PhCH₂)₂, *p*-diphenylmethane, m. 215-30°, and polyphenylethyl, whose mol. wt. rose from 2100 to 6600 on changing the ratio C₆H₆ to (CH₂Cl)₂ from 2 to 1.20. The yields of the low-mol. products underwent a steady decline as the reagent ratio was altered, amounting to 5.2% (total) for the lowest ratio. The polymer yield rose from 52 to 75%. After a 1.4 molar ratio is reached the mol.-wt. rise of the polymer becomes relatively small with increase of (CH₂Cl)₂ concn. *p*-C₆H₄(CH₂CH₂Ph)₂ with K₂Cr₂O₇ gave BrOH and *p*-C₆H₄(CO₂H)₂, confirmed by conversion to the di-Me ester, m. 130-3.5°. The polyphenylethyl polymer thus is probably a linear mol. of C₆H₅ and CH₂ units in para linkage. G. M. Koshak

Instr. Org. Chem
AS USSR

KORSHAK, V. V.

USSR/Chemistry - Polyamide Fibers Sep/Oct 51

High-Molecular Compounds. Communication 39.

Condensation of 1,2-Dichloroethane With Benzene,

G. S. Kolesnikov, V. V. Korshak, T. V. Smirnov,

Inst of Org Chem, Acad Sci USSR

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 5,

pp 596-600

Study of polycondensation of $C_6H_4Cl_2$ with dif-

ferent molar proportions of C_6H_6 in presence of

$AlCl_3$ revealed that chief product is polyphenyl-

ene ethyl, other products are diphenylethane and

$C_6H_4Cl_2$.

USSR/Chemistry - Polyamide Fibers Sep/Oct 51

(Contd)

bis-(p-(3-phenylethyl))-benzene. Mol wt of

polyphenylene ethyl increases with reduced ex-

cess of C_6H_6 . (smaller molar ratio of C_6H_6 to

$C_6H_4Cl_2$).

195720

PA 195720

KORSHAK, V. V.

PA 197T11

USSR/chemistry - High-Molecular
Compounds

Nov/Dec 51

"High-Molecular Compounds: IX. Alcoholysis of
Polyesters," V. V. Korshak, S. V. Vinogradova, Inst
Org Chem, Acad Sci USSR

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6, pp 756-
759.

Investigated alcoholysis of polyhexamethyleneseca-
ceate by heating it with varying quantities of
cetyl alc. Found that the destruction of poly-
ester is directly proportional to the quantity of
cetyl alc. The longest mole are destroyed 1st

USSR/chemistry - High-Molecular Nov/Dec 51
Compounds (Contd)

cause the greatest deg of destruction. Because
of the equil character of the reaction and its
reversibility, not all of the cetyl alc is uti-
lized in the destructive reaction.

197T11

High-molecular compounds. XI. Comparative tendency toward destruction of macromolecules of different lengths. V. V. Korshak, *Izvst. Akad. Nauk S.S.S.R., Khim. Nauk* 1951, 783-5; C.I. 46, 70842.—The chain scission of polymers by a "destructive" mol. is more pronounced in substances of high mol. wt. Assuming the necessity for 1 mole of such a substance for cleavage of 1 link of the polymer, it is readily seen that 0.01 mol.-% "destructive" material amts. to 0.0010 mole of this substance per mole of polymer contg. 10 units, and only 0.05 mole per mole of a 500-unit polymer. The location of the cleavage mole of a 500-unit polymer. The location of the cleavage mole in respect to the mol. wt. of the resulting fragments is discussed briefly; cleavage near the mol. center produces 3 small fragments relatively "resistant" to further cleavage, while a cleavage near a chain end produces 1 large fragment, whose fusibility is nearly that of the initial polymer. XII. Alcohols of polyesters. V. V. Korshak and S. V. Viskogradova, *Ibid.* 786-90.—In the alcoholysis of polybenzomethylene sebacate by cetyl alc. at 190° the degree of chain scission is directly proportional to the concn. of cetyl alc. The longer chains are cleaved first (cf. preceding abstr.). Because of reversibility of the reaction, not all the alc. is utilized. XIII. Transarylation reaction of cetyl alc. is utilized. XIV. Transarylation reaction of diethylallylamine. G. S. Kolesnikov and V. V. Korshak (D. I. Mendeleev Chem.-Technol. Inst., Moscow), *Ibid.* 761-70.—Addn. of 100 g. PhCH_2Cl to 400 ml. C_6H_6 761-70.—Addn. of 100 g. PhCH_2Cl to 400 ml. C_6H_6 and 6 g. AlCl_3 at reflux gave 49-53% Ph_2CH_2 , b.p. 130-40°. Similarly, $(\text{CH}_3\text{CH}_2)_2\text{AlCl}$ yields 35-40% $(\text{PhCH}_2)_2\text{AlH}$, m. 51-2° (from EtOH). Friedel-Crafts reaction

of C_6H_6 with $\text{CH}_2\text{CH}_2\text{Br}$ according to Tashervanik and Yatsimirskii (C.A. 35, 3981) gave but 15% $\text{CH}_2(\text{CH}_2\text{Ph})_2$; the reaction run as outlined above gave 20-34%, b.p. 135-4°; Wurtz-Fittig reaction with 13.6 g. Na dust in Et₂O with 31.4 g. $\text{CH}_2\text{CH}_2\text{Br}$ and 31.4 g. PhBr gave 25-30% (based on PhBr). $(\text{CH}_2\text{CH}_2\text{OH})_2$ (90 g.) treated at 0° with 207 g. PhBr , then let stand overnight, gave 35-60% 1,4-dibromobutane, b. 100-3°. Wurtz-Fittig reaction of this with PhBr gave 28-32% 1,4-diphenylbutane, m. 51-2°, b.p. 123-55° (crude). The above diaryl deriva. (0.11 mole) were kept 10 min. at 130°, then treated with 1 g. AlCl_3 and subjected to a stream of pure N, the volatile hydrocarbons being collected over a 5-hr. exptl. period. $\text{PhCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{Ph}$, $(\text{PhCH}_2)_2\text{CH}_2$, $(\text{PhCH}_2)_3\text{CH}$, and 1,2-bis(tetrahydro-2-naphthyl)ethane undergo the transarylation reaction, yielding, resp.: 6.1, 8.5, 4.8, 1.6, and 7.2 g. C_6H_6 (on, yielding, resp.: 6.1, 8.5, 4.8, 1.6, and 7.2 g. C_6H_6), 0, 0, 1.2, 7.6, 1.8, and 11.7 g. starting material; 6.75, 7.9, 7.0, 5.1, 2.2, and 13.2 g. linear polymer (sol.); and 2.33, 0.1, 0.5, 0, and 0 g. tridimensional polymer. The reaction is visualized as taking place at ortho and para positions of the aromatic rings with participation of the cleaved aliphatic bridges. The last substance gave 6.6 g. tetrahydronaphthalene. The polymer from $(\text{PhCH}_2)_2\text{AlH}$ is polyphenylene-ethyl, while $\text{CH}_2(\text{CH}_2\text{Ph})_2$ yields polyphenylenepropyl, as shown by oxidation. G. M. Kozolapoff

KORSHAK, V. V.

USSR/Chemistry - High-Molecular Compounds

Nov/Dec 51

"High-Molecular Compounds. IXLII. Rearylation of Diarylalkylenes," G. S. Kolesnikov, V. V. Korshak, Inst Org Chem, Acad Sci USSR, Moscow Chimicotechnol Inst imeni D. I. Mendeleev

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6, pp 761-770

Polycondensation of 1,2-diphenylethane in the presence of $AlCl_3$ into polyphenyleneethyl, as described previously by the authors, is based on a rearylation (benzene is liberated). In this instance, established that diphenylmethane, 1,1-diphenylethane, 1,3-diphenylpropane (I) 1,4-diphenylbutane (II), and 1,2-di-(beta-tetralyl)-ethane also undergo rearylation. Found that with I and II, there is cyclic condensation under formation of hydeindene and tetralin in addition to polycondensation. With II, cyclization predominates. In the rearylation of 1,3-diphenylpropane, polyphenylenepropyl is formed.

PA 197T12

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Compounds of high molecular weight. XXX. Synthesis of 2-methoxy-1-vinylnaphthalene. G. S. Kolesnikov, V. V. Korshak, and I. P. Krakovskaya (D. I. Mendeleev Chem. Technol. Inst., Moscow), *Zhur. Obshch. Khim.* (J. Gen. Chem.) 21, 397-401 (1951); cf. C.A. 45, 5001c. — 2-CuH₃OH (100 g.) in 200 g. NaOH, 400 ml. H₂O, and 400 ml. EtOH at 60-70° is treated with 100 g. CHCl₃; after the red color develops, the EtOH is dist. off and mixt. cooled and acidified with HCl; extr. with Et₂O yields 72% 2-hydroxy-1-naphthaldehyde, b.p. 185-7°, m. 78-80° (from EtOH). This (3.6 g.) is added to 80 ml. 2% KOH at the b.p. and treated with 10 g. Me₂SO₂ over 20-30 min. with the mixt. kept alk. at all times; filtration after cooling yields 86% crude 2-methoxy-1-naphthaldehyde, m. 84° (from EtOH); a little starting material may be recovered from the soln. The product (4 g.) added to MeMgI (from 10 g. MeI) in 25 ml. Et₂O and 15 ml. dry C₆H₆ and heated 30-40 min. yields after the usual treatment 80.6% (2-methoxy-1-naphthyl)methylcarbinol, m. 72-3° (from Et₂O, then from petr. ether). Dehydration by heating with an open flame in the presence of KHSO₄ and a little hydroquinone yields a glassy polymer of 2-methoxy-1-vinylnaphthalene, softening about 110-15°, with polymerization stage 64. Dehydration under reduced pressure (20 mm.) gives a similar polymer, softening at 104°, m. 134°. Hence, the 2-MeO group does not sterically hinder the activity of the vinyl group.

G. M. Kosolapoff

1951

KORSHAK, V. V.

"Chemistry of Highly Molecular Compounds," Kommunist, No. 62, 16 March 1951,
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Transarylation reaction of diarylalkanes V. A. Kotshak and G. S. Kolesnikov. *Doklady Akad. Nauk S.S.S.R.* 76: 69-72 (1951); cf. C.A. 44: 4888u. — Treatment of Ph-CH_2 , Ph-CHMe , $\text{Ph-CH}_2\text{CH}_2\text{Ph}$, $\text{Ph-CH}_2\text{CH}_2\text{Ph}$, $\text{Ph-CH}_2\text{CH}_2\text{Ph}$ and 1,2-bis(tetrahydro-2-naphthyl)ethane with AlCl_3 yields C_6H_6 or the corresponding elementary aromatic hydrocarbon, and a polymeric product (linear or insol. tridimensional). The insol. tridimensional polymers appear to result by chain branching, possibly at the ortho positions of Ph rings in a linear polymer. (Ph-CH_2)_n yields, as polymeric product, polyphenyleneethyl (C.A. 42, 7274c), proved by oxidation to $p\text{-C}_6\text{H}_4(\text{CO}_2\text{H})_2$. The polymer from $\text{Ph-CH}_2\text{CH}_2\text{Ph}$ consists of $\sim\text{C}_6\text{H}_4\text{CH}_2\text{CH}_2\text{C}_6\text{H}_4$ units, as shown by oxidation to $p\text{-C}_6\text{H}_4(\text{CO}_2\text{H})_2$ and $p\text{-C}_6\text{H}_4(\text{CH}_2\text{CO}_2\text{H})_2$; along with this linear product there is indication of ring formation and chainfolds as indan was also isolated. With $\text{Ph-CH}_2\text{CH}_2\text{Ph}$ the cyclization is predominant and the main product is tetrahydronaphthalene and C_{10}H_8 ; the reaction being reversible, 5.9-8.4% yields of $\text{Ph-CH}_2\text{CH}_2\text{Ph}$ are obtained from tetrahydronaphthalene and AlCl_3 . The possible mode of formation of 9,10-dimethyl-9,10-dihydroanthracene from Ph-CHMe and of anthracene from Ph-CH_2 in the presence of AlCl_3 may be: reaction of 2 mols. of the aromatic compd., yielding *o*- and *p*-condensation dimers; the *o*-dimer readily cyclizes with elimination of C_6H_6 , while the *p*-dimer may be isomerized into the *o*-dimer to carry the cyclization reaction to high yields. G. M. K.

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